Appendix D

Aboriginal cultural heritage assessment report

Orange Grove Sun Farm

Overland Sun Farming

Orange Grove Sun Farm

Aboriginal cultural heritage assessment

Prepared for Orange Grove Sun Farm Pty Ltd | 11 May 2018

Orange Grove Sun Farm

Aboriginal cultural heritage assessment

Prepared for Orange Grove Sun Farm Pty Ltd | 11 May 2018

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Orange Grove Sun Farm

Final

Report J17210RP1 | Prepared for Orange Grove Sun Farm Pty Ltd | 11 May 2018

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Date	11 May 2018	Date	11 May 2018

Document Control

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Executive Summary

OVERLAND Sun Farming Pty Ltd (OVERLAND) on behalf of Orange Grove Sun Farm Pty Ltd (the proponent) proposes to develop the Orange Grove Sun Farm, a large-scale solar photovoltaic (PV) generation facility and associated building and electrical infrastructure including grid connection works near the township of Gunnedah in northern NSW (the project).

Approval for the project is being sought under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). An environmental impact statement (EIS) is a requirement of the approval processes. This Aboriginal cultural heritage assessment (ACHA) forms part of the EIS. It documents the methodology and results of the assessment, the measures taken to avoid and minimise impacts and the additional mitigation and management measures proposed.

This ACHA has been prepared in accordance with the Secretary's Environmental Assessment Requirements for the project and leading practice guidelines. In summary, the ACHA has involved:

- background research of the study area's environmental, archaeological and ethno-historical context;
- Aboriginal consultation in accordance with the *Aboriginal Consultation Requirements for Proponents 2010* (DECCW 2010c);
- an archaeological survey following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a); and
- an assessment of archaeological (scientific) and socio-cultural and historic values (significance to the Aboriginal community), impact assessment and management recommendations for the identified Aboriginal cultural heritage values using the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

Eleven Aboriginal parties registered their interest in the project and are referred to as registered Aboriginal parties (RAPs). RAPs were offered to provide cultural information about the study area, and provided with draft assessment and fieldwork methods for review. To date, no information has been received that identifies specific heritage values unrelated to the Aboriginal sites and objects in the study area. No historical connection has been identified specifically about the study area.

An archaeological survey was undertaken on 30 November 2017 for an area that sampled the extent of the study area which extends across a continuous plain landform. The survey involved pedestrian and vehicle transects. The survey extended beyond the proposed development footprint because its final size and layout was not confirmed during the time of the survey. This method allowed for the development footprint to be refined further to avoid environmental constraints including archaeological sites and ecologically sensitive areas.

Two isolated artefacts (OG_ISF1 and OG_ISF2) and two possible scar trees (OG_PST1 and OG_PST2) were recorded during the survey. The isolated artefacts were assessed to be of low scientific significance as they were common artefacts in a disturbed context. The significance of the possible scar trees is currently undetermined, but would likely be moderate or high significance if they were confirmed to be of Aboriginal origin.

One possible scar tree (OG_PST1) and one isolated artefact (OG_ISF1) will be avoided because of development footprint refinements made during the assessment process. One possible scar tree (OG_PST2) is within the southern portion of the development footprint, south of Orange Grove Road, but will be avoided and will not be impacted by the project.

The isolated artefact (OG_ISF2) is within the development footprint and the only known Aboriginal object that will be destroyed by the project. EMM propose that unmitigated impacts are allowed for the site as the construction stage of the project is likely to further displace the artefact from its already disturbed location. Overall, the artefact will remain in the general vicinity of its recorded location. As the site is of low archaeological significance and has been sufficiently recorded, salvage in the form of collection is not considered warranted.

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1 Introduction

1.1 Overview

OVERLAND Sun Farming Pty Ltd (OVERLAND) on behalf of Orange Grove Sun Farm Pty Ltd (the proponent) proposes to develop the Orange Grove Sun Farm, a large-scale solar photovoltaic (PV) generation facility and associated building and electrical infrastructure including grid connection works near the township of Gunnedah in northern NSW (Figure 1.1) (the project). The proponent proposes to develop the project on a site within the Gunnedah Shire local government area (LGA), approximately 12 kilometres (km) east of the township of Gunnedah.

The project is a State significant development (SSD) under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). A development application (DA) for the project is required to be submitted under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Minister for Planning, or the Minister's delegate, is the consent authority.

An environmental impact statement (EIS) is a requirement of the approval process. This Aboriginal cultural heritage assessment (ACHA) report forms part of the EIS. The ACHA documents methods and results, and the initiatives built into the project design to avoid and minimise impacts to Aboriginal cultural heritage values. Additionally, it proposes mitigation and management measures to address any residual impacts not able to be avoided.

1.2 Site description

The site is approximately 12 km east of the township of Gunnedah. The site is split into two separate portions by Orange Grove Road, and encompasses an area of approximately 817 hectares (ha) (Figure 1.2). The legal property description of the site is given in Table 1.1.

Table 1.1 Property description

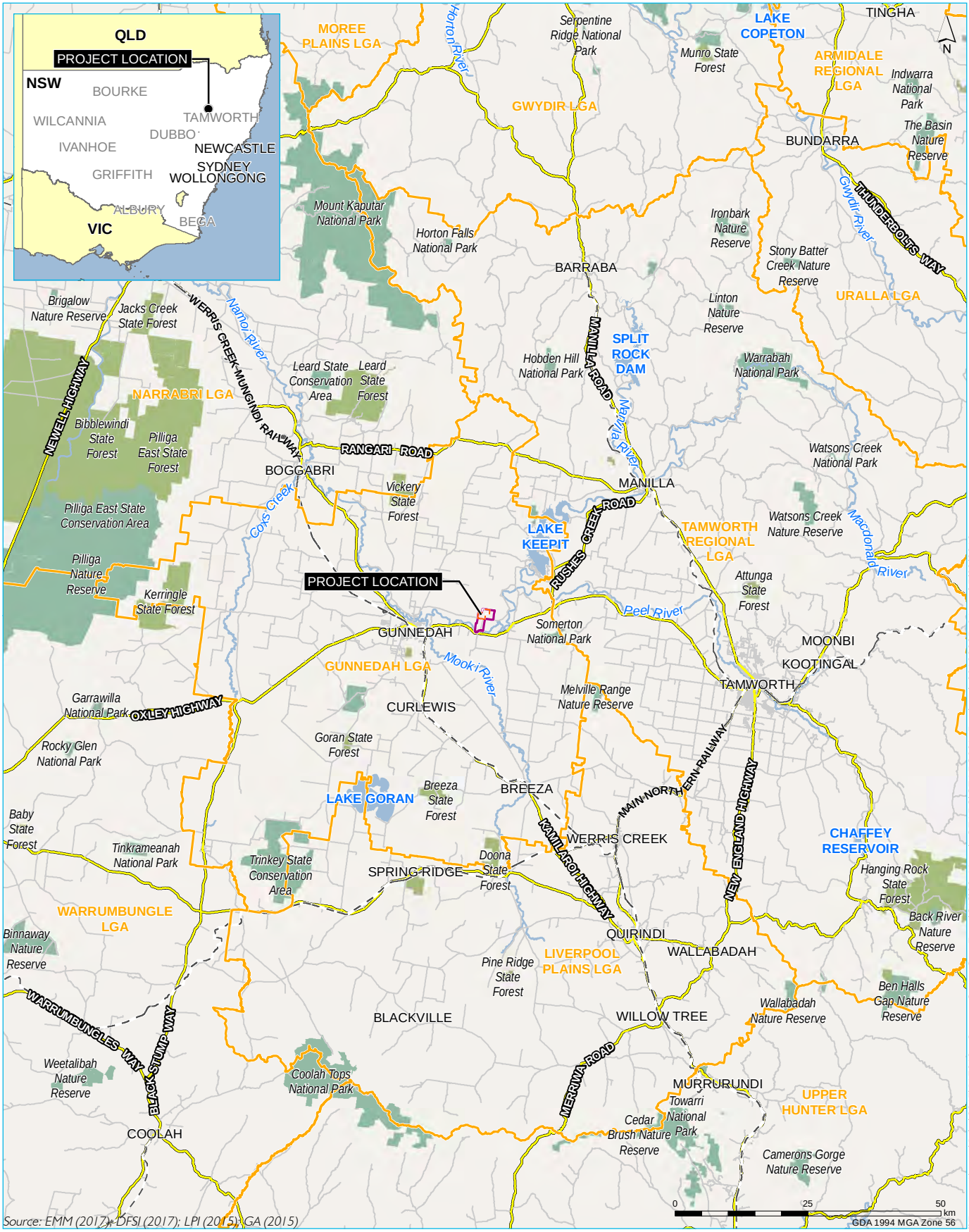
Portion	Site		Development footprint	
	Lot description	**Area (ha)**	**Lot description**	**Area (ha)**
Northern	DP 945590 (Lots 1 and 2)	463	DP 945590 (Lot 1 and part Lot 2)	239
	DP 754928 (Lots 27 and 30)		DP 754928 (Lot 30)	
	DP 1068520 (Lots 1 and 2)		DP 1068520 (part lot 1)	
	DP 1068518 (Lot 3)		DP 1068518 (Lot 3)	
Southern	DP 945590 (Lot 2)	354	DP 945590 (part Lot 2)	14
	DP 126183 (Lots 1, 2 and 3)		DP 126183 (part Lot 1)	
Total area (ha)		**817**		**253**

The development footprint is defined as the land area within the site boundary where project infrastructure will be constructed and operate for the project life. The development footprint encompasses an area of 253 ha, which has been refined through the project design process to avoid identified environmental constraints. The development footprint is comprised of a northern portion (239 ha), north of Orange Grove Road and a southern portion (14 ha), south of Orange Grove Road.

The study area for this ACHA is larger than the development footprint and encompasses an area of 422 ha. The study area that has been adopted as part of this ACHA has been refined based on the outcomes of a number of technical assessments.

The site is zoned RU1 Primary Production under the Gunnedah Local Environmental Plan 2011 (Gunnedah LEP). The site has been highly modified by past disturbance associated with land clearing, irrigation development, cropping, livestock grazing and weed invasion. It is currently used for livestock grazing and cropping.

The project is ideally located close to TransGrid's 132 kilovolt (kV) transmission line, which runs parallel to the southern boundary of the southern portion of the development footprint (Figure 1.2). It also has suitable access to the local and regional road network including the Kamilaroi and Oxley Highways, Kelvin Road and Orange Grove Road.



Source: EMM (2017); DFSI (2017); LPI (2015); GA (2015)

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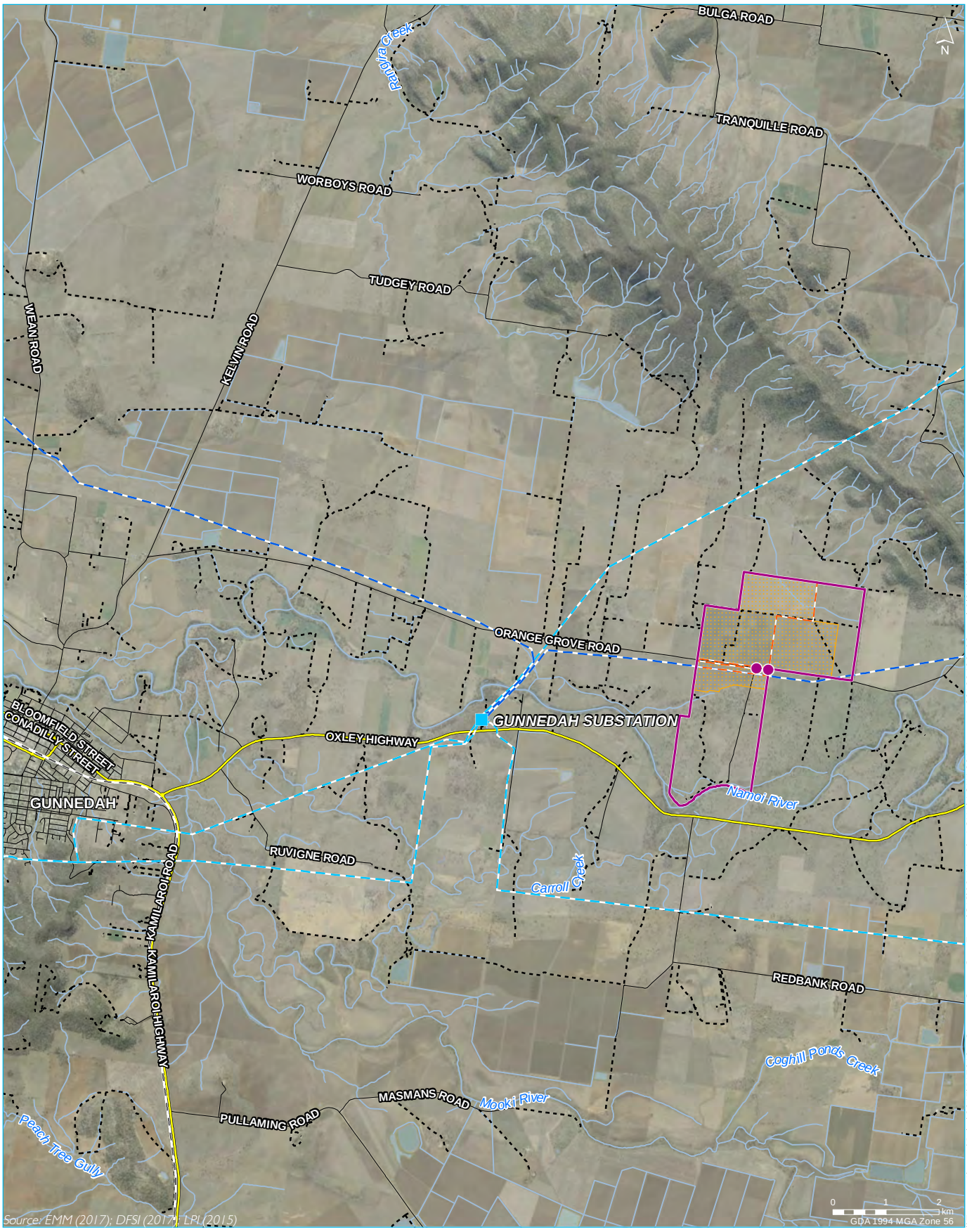
KEY

- Orange Grove Sun Farm site boundary
- Development footprint
- Local government area (LGA) boundary
- Rail line
- Main road
- Local road
- Major waterway
- Waterbody
- NPWS reserve
- State forest

Regional context

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 1.1

EMM



KEY

- Orange Grove Sun Farm site boundary
- Development footprint
- Study area
- Indicative site access point
- 132 kV transmission line
- 66 kV transmission line
- Rail line
- Main road
- Local road
- Vehicular track
- Watercourse / drainage line
- Waterbody

Project layout

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 1.2

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1.3 Assessment guidelines and requirements

This ACHA has been prepared in accordance with the relevant government assessment requirements, guidelines and policies, and in consultation with the relevant government agencies.

The ACHA was prepared with reference to the methods outlined in:

- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code) (DECCW 2010a); and
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (DECCW 2010b).

Aboriginal consultation undertaken as part of the assessment has followed the *Aboriginal Consultation Requirements for Proponents* (DECCW 2010c).

The ACHA was prepared in accordance with the requirements of the NSW Department of Planning and Environment (DPE), which are set out in the Secretary's Environmental Assessment Requirements (SEARs) for the project, issued on 20 December 2017. The SEARs identify matters which must be addressed in the EIS. A copy of the SEARs is attached to the EIS as Appendix A, while Table 1.2 lists the individual requirements relevant to this ACHA and where they are addressed in this report.

Table 1.2 Aboriginal cultural heritage – relevant SEARs issued by DPE

Requirement	Section addressed
Heritage – including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community	Whole report. Note: This report only includes matters relating to Aboriginal cultural heritage and not historical heritage, which will be addressed within the EIS.

To inform preparation of the SEARs, DPE invited other government agencies to recommend matters to be addressed in the EIS. These matters were taken into account by the Secretary for DPE when preparing the SEARs. Copies of government agency advice to DPE were attached to the SEARs.

The NSW Office of Environment and Heritage (OEH) raised matters relevant to the ACHA. The matters raised include standard requirements for a project of this nature and are listed in Table 1.3.

Table 1.3 Relevant OEH comments on SEARs

OEH requirement	Section addressed
The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the Orange Grove Sun Farm project and document these in the EIS. This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW, 2011) and consultation with OEH regional officers.	Chapters 3–7
Where Aboriginal cultural heritage values are identified, consultation with Aboriginal people must be undertaken and documented in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the EIS.	Chapters 2, 9 and Appendix A
Impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.	Chapters 8 and 9

1.4 Objectives of the assessment

The objectives of the ACHA were to:

- identify Aboriginal cultural heritage values relevant to the site which include:
  - Aboriginal objects and sites;
  - Aboriginal socio-cultural or historic values which might not be related to Aboriginal objects; and
  - areas of archaeological sensitivity.
- assess the significance of Aboriginal objects, sites and locations identified in the course of the archaeological investigations and through Aboriginal community consultation;
- assess the impact of the project on identified Aboriginal cultural heritage values; and
- propose appropriate management measures for potentially impacted Aboriginal cultural heritage values in response to their assessed significance.

1.5 Authorship and acknowledgments

This report was prepared by Senior Archaeologist Ryan Desic (BA (Hons) Prehistoric and Historical Archaeology) and was reviewed by Heritage Services Manager Pamela Kottaras (BA (Hons) Prehistoric and Historical Archaeology).

EMM would like to thank all Aboriginal community members, including registered Aboriginal parties (RAPs) for their involvement in ongoing correspondence and fieldwork, including:

- Ronald Long;
- Yvonne Rodgers;
- Natasha Rodgers;
- Socks (full name was not provided);
- Aaron Talbott; and
- Steven Talbott.

1.6 Project description

1.6.1 Overview

The project includes the development, construction and operation of a solar PV electricity generation facility, which comprises the installation of PV solar panels, electrical cabling, electrical switch yard / substation, electrical connection to the TransGrid network and other associated infrastructure within the development footprint. Further details of the project are provided in Chapter 3 of the EIS.

The project will connect to the TransGrid 132 kV electricity distribution network that feeds TransGrid's Narrabri to Gunnedah and Gunnedah to Tamworth network system (see Figure 1.2). The electricity generated from the project will be sold to one or more of a registered energy retailing organisation, large energy user (governmental or private) or to the National Electricity Market that is managed by the Australian Energy Market Operator.

As an indication of scale, based on current technology, the estimated total installed capacity will be in the order of 110 MW, which would be generated by approximately 330,000 PV solar panels.

The project comprises the following key components:

- a network of PV solar panel arrays including supporting structures and tracker system;
- an internal network of electrical collection and distribution systems including electrical inverters;
- an internal network of communications and control cabling and systems;
- switchyard including electrical switching, control and monitoring equipment, electrical transformation system and operational control room;
- electrical connection and communications cabling from the on-site switchyard and transformation area to the TransGrid 132 kV electrical network;

- a management hub, including material storage areas, demountable offices, amenities and equipment sheds;
- provision of land area within the development footprint for possible future energy storage and network support devices; and
- fencing, access roads from adjacent public roadways, on-site parking and internal access roads.

The project may include the installation of battery and energy storage devices within a secure compound within the development footprint. The rated capacity of future battery and energy storage devices has not been determined at this stage of project development. The inclusion of such energy storage devices will be determined during the detailed design stage of the project, and will be dependent on network integration and commercial considerations at such time. A modification to the consent would be sought to permit installation of this infrastructure within the development footprint if required.

The purpose of the battery and energy storage devices would be to store energy on-site, which will allow energy to be released at specific times. The battery and energy storage devices would also provide a number of network services, including frequency control integration and energy arbitrage, as well as improved reliability of electricity provision from the project. Energy arbitrage allows energy to be stored on-site during periods of low demand and then be discharged into the network during periods of greater demand.

The infrastructure associated with the project will cover an area within the development footprint (Figure 1.2). During the preparation of the EIS, the development footprint within the site boundary has been refined on the basis of grid connection studies, environmental constraints identification and design of project infrastructure with the objective of developing an efficient project that avoids and minimises environmental impacts.

1.7 Construction

1.7.1 Overview

The ground disturbance activities associated with the project are the focus of the impact assessment for the ACHA as these activities have the potential to harm Aboriginal objects if present within a landscape. Ground disturbance activities will be limited to the development footprint. A description of the construction activities is outlined below.

1.7.2 Site preparation

Due to the site's flat terrain and predominantly cleared landscape, limited site preparation and civil works will be required. Site establishment works and preparation for construction will include:

- the establishment of a temporary construction site compound in a fenced-off area within the development footprint including:
  - a site office;
  - containers for storage; and
  - parking areas.
- removal of above and below ground level irrigation structures;

- construction of access tracks and boundary fencing;
- site survey to confirm infrastructure positioning and placement; and
- geotechnical investigations to confirm the ground condition.

1.7.3 Construction stages

Upon completion of the site establishment and pre-construction activities described above, project activities will generally be as follows:

- posts will be driven or screwed into the ground (depending on the outcomes of the geotechnical survey and the condition of the ground during construction) to provide support for the mounting framework required for the PV solar panels;
- foundations for the inverter blocks will be prepared;
- underground cabling will be installed between the PV solar panels and the collection circuit (this cabling will carry power throughout the site, between the inverters and central electrical switchyard, which will be located in the management hub);
- PV solar panel frames will be assembled and mounted on top of the piles;
- PV solar panels, inverters, transformers and switchgear units will be installed;
- dependent on commercial considerations at the time of construction, battery and energy storage devices may be installed;
- connection infrastructure between the project electrical switchyard and Transgrid's 132 kV transmission line will be constructed;
- the management hub will be constructed;
- permanent fencing and security will be constructed;
- if required, screening will be constructed; and
- the temporary construction site compound will be removed.

As noted previously, the project may include the installation of battery and energy storage devices within the development footprint. The proposed battery and energy storage devices would be housed in a secure compound within the development footprint and, if required, would be installed concurrently with other key project infrastructure including the PV solar panels, inverters, transformers and switchgear units.

2 Aboriginal consultation

2.1 Statutory basis

The *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c) were used for the project. The stages of consultation and their outcomes are provided in the headings below.

Each private Aboriginal organisation or individual who requested to be registered for consultation within the timeframes of the requirements is referred to as a RAP.

Full documentation of the consultation process is provided in Appendix A of this report.

2.2 Stage 1 — notification and registration of Aboriginal parties

2.2.1 Agency contact

EMM issued a letter to government agencies on 21 September 2017 requesting advice on which Aboriginal parties to invite for consultation. The agencies contacted are listed below:

- OEH Planning, Aboriginal Heritage;
- Red Chief Local Aboriginal Land Council (Deerubbin LALC);
- Gunnedah Shire Council;
- North West Local Land Services (former catchment management authority);
- National Native Title Tribunal;
- The Office of the Registrar of Aboriginal Owners; and
- NTSCorp.

2.2.2 Newspaper advertisement

A notification was placed in a local newspaper detailing the project name, proponent, project location, project description and a request for Aboriginal knowledge holders to register interest in the project. The advertisement was placed in the *Namoi Valley Independent* on 12 October 2017 allowing a 14 day registration period. A copy of the advertisement is included in the consultation documentation provided in Appendix A.

2.2.3 Aboriginal group invitation to register

The Aboriginal parties identified by the government agencies were invited to register their interest in the project on 31 October 2017.

2.2.4 Registered Aboriginal parties

Eleven Aboriginal parties registered their interest in the project and are listed in Table 2.1.

Table 2.1 List of registered Aboriginal parties

Registered Aboriginal party name
AGA Services
Shirley May Talbott
AT Gomilaroi Cultural Consultancy
Cacatua General Service (Cacatua Culture Consultants)
Gomeroi People NC2011/006 (via NTSCORP)
Gunjeewong Cultural Heritage Aboriginal Corporation
Katrina Mckinnon
Murra Bidgee Aboriginal Corporation, Cultural Heritage
Natasha Rodgers
Red Chief Local Aboriginal Land Council
Ronald Long

2.3 Stages 2 and 3 — presentation of information and gathering cultural information

2.3.1 Presentation of project information and assessment methods

A letter was issued to all RAPs identified from government agencies and those registered from the newspaper advertisement on 31 October 2017 presenting an overview of the project, outlining the proposed assessment methods and requesting cultural information associated with the site. RAPs were given 28 days to respond to the proposed assessment method, but were informed that cultural information could be provided throughout the duration of the assessment.

No responses were received specifically to the assessment methodology within the 28 day timeframe, other than offers to assist with the proposed fieldwork.

In response to their prior requests and subsequent to the archaeological survey completed on 30 November 2017, both Steve Talbott, on behalf of Gomeroi People Native Title Claimants, and Aaron Talbott, on behalf of AT Gomilaroi Cultural Consultancy, were invited to attend a site visit on 7 December 2017. Both Aaron and Steve indicated that they would attend, however, only Aaron was present on the day. Aaron was escorted over the site by OVERLAND representative, Sten Fraser, and provided with a description of the project and an outline of the results of the archaeological survey.

2.4 Stage 4 — review of draft Aboriginal cultural heritage assessment

2.4.1 Distribution of draft report

A draft version of this report, which included all background information, results, draft significance assessment and draft management recommendations, was issued to all RAPs on 8 February 2018 accompanied by an email specifying a 28 day timeframe for review. The draft report included highlighted text indicating sections where RAP input was sought in regard to Aboriginal heritage values, input into significance assessment and management measures.

No responses were received by RAPs within the 28 day timeframe or to date.

3 Environmental context

3.1 Rationale

The environmental characteristics of any area influenced the way Aboriginal people used the landscape. In the past, the availability of resources such as water, flora, fauna, stone material and topography played a substantial role in the choice of camping, transitory movement and ceremonial areas used by Aboriginal people, therefore understanding environmental factors assists with predicting where Aboriginal sites are likely to occur. Additionally, natural and cultural (human-made) site formation processes influence the way archaeological material is distributed and preserved across a landscape.

The environmental context described in this chapter has focused on the study area as it was the focus of the archaeological and impact assessments. Notwithstanding, reference is made to the site, study area and the development footprint where relevant.

3.2 Landform and topography

The study area is within the Brigalow Belt South Bioregion, which extends from south of Dubbo in central-western NSW to the central-Queensland coast. On a landscape scale, it is part of an extensive floodplain of the Namoi River. Locally, the study area is characterised by a landform pattern of mixed stagnant alluvial plains and features a single and continuous plain landform element. Overall, the study area can be described as level, featuring slopes of less than 1%.

The study area is flanked approximately 2 km to the north-east by rolling to very steep hills of Devonian and Carboniferous geologies of the Melville Ranges. Slopes are moderately inclined to steep (greater than 20% slope but generally less than 50%) and feature up to 30% rock outcrop which can form localised scarps and scree slopes (OEH 2017).

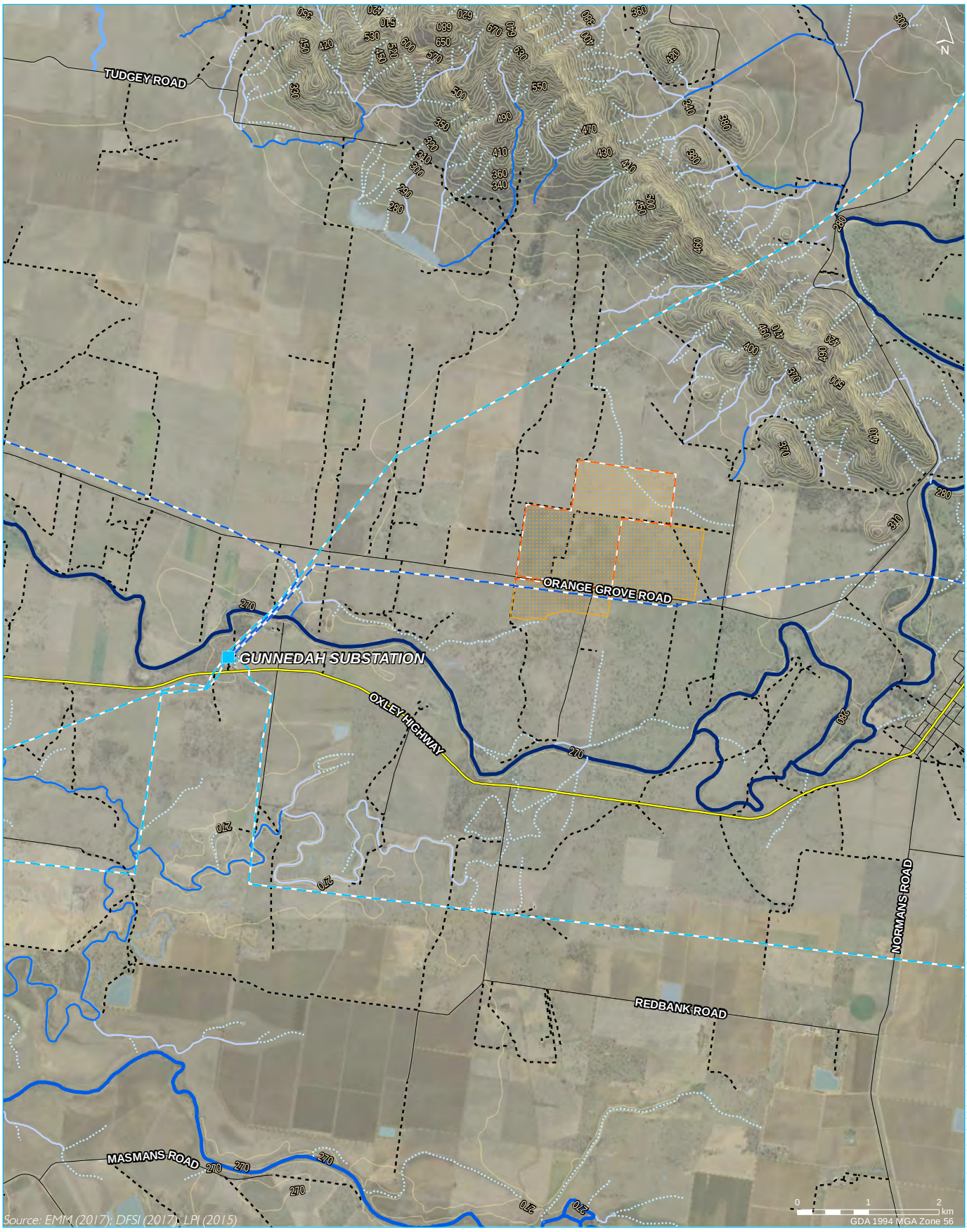
The topography and drainage of the local area is shown in Figure 3.1.

3.3 Drainage and hydrology

At its closest point, the study area is approximately 1.3 km north-east of the Namoi River, which dominates the drainage of the local area. The Namoi River is one of several major rivers that flow through the Brigalow Belt South Bioregion and their catchments form an integral part of the Murray-Darling river system.

Because of generally level terrain, drainage occurs by sheet flow with few, very widely spaced incised channels. Locally, the head of a first order ephemeral tributary of the Namoi River starts along the southern boundary of the study area and flows south-west. Additionally, a first order stream is mapped as intersecting with the north-eastern corner of the study area. However, this stream can be described as ‘interrupted’ whereby the drainage depression no longer becomes defined and probably continues as sheet flow through the plain and eventually into the Namoi River. Subsequent field survey of this location revealed that the mapped drainage depression was almost imperceptible (refer Plate 6.11 in Section 6.5 of this report).

The hill range to the north-east of the site creates a watershed that directs drainage south-west onto the plain towards the site. However, no distinguished channels are formed at the base of the hill range and drainage into the Namoi River is likely to occur as sheet wash.



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KEY

- Development footprint
- Study area
- 132 kV transmission line
- 66 kV transmission line
- Contour (10m)
- Main road
- Local road
- Vehicular track
- Waterbody

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 7th order
- 8th order
- 9th order

Topography and drainage

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 3.1

EMM

3.4 Geology and soils

The study area is on complex alluvium derived from the range of geological formations in the Liverpool Plains catchment. Sorting of material by floodwaters has lead to surface lithologies ranging from fine sands to clays and gravels. The depth of alluvium to basement material varies from 5 m to >50 m. The geology of the local area is mapped on Figure 3.2.

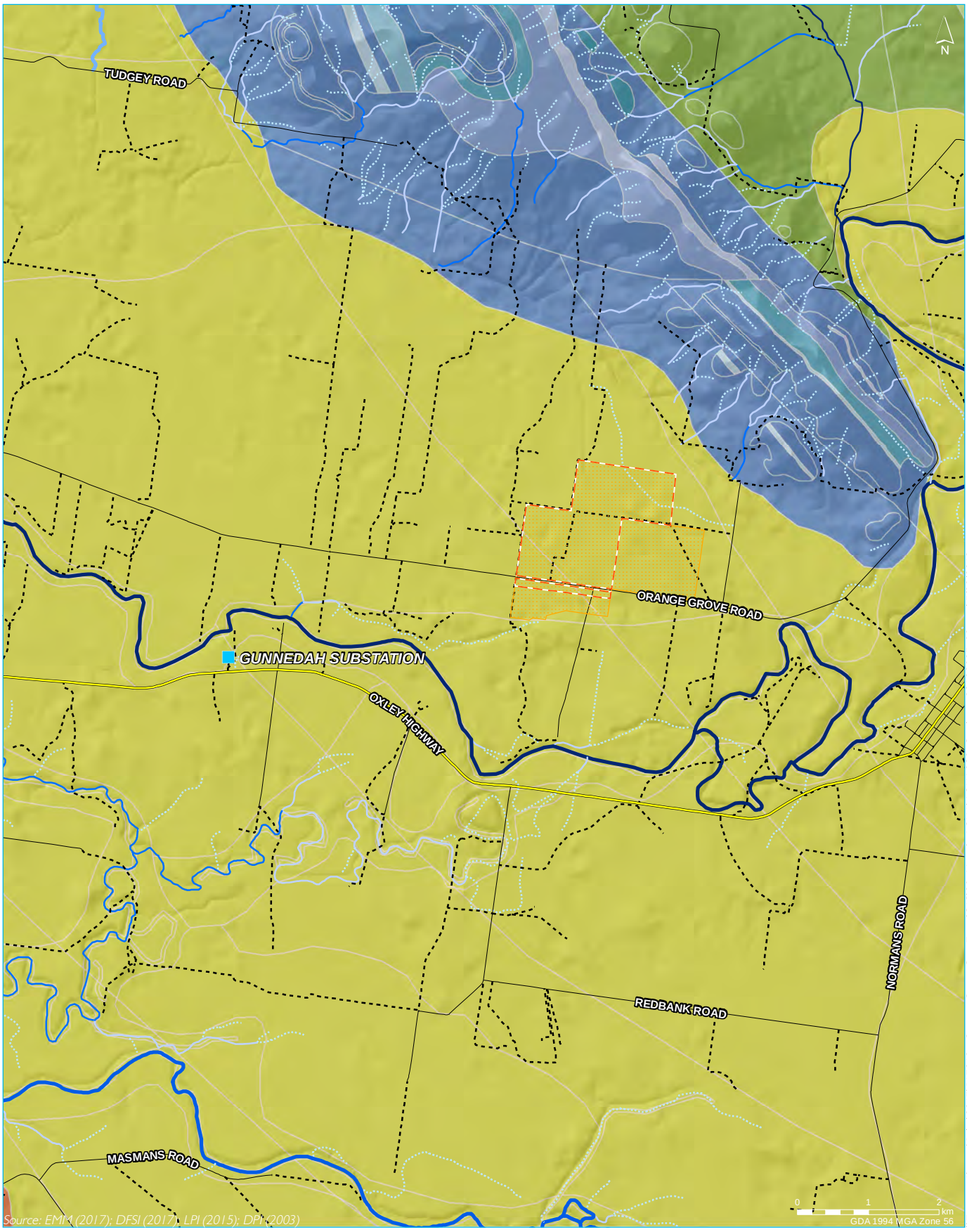
The study area is part of the Burburgate soil landscape, described as mixed stagnant alluvial plains and floodplains of the Namoi River on the Liverpool Plains, characterised by a complex distribution of soils, consisting of moderately drained brown clays, and poorly drained red-brown earths, with smaller areas of high floodplain often consisting of solodic soils (OEH 2017). The local soil landscapes are mapped on Figure 3.3.

The hill range, 2 km north-east of the study area, has a complex mix of Carboniferous geologies. Lithology includes arenite, conglomerate, shale, siltstone, limestone, magnetite, coal, andesite, rhyodacite, felsic, airfall and ashflow tuff and tillite (OEH 2017). Depending on their quality and outcropping extent, some of these volcanic materials may have been suitable for stone tool manufacture. Tuff, rhyodacite, and andesite are three such materials.

3.5 Climate

At the start of the Holocene epoch approximately 12,000 years ago, the climatic conditions changed substantially. The melting of the ice sheets in the Northern Hemisphere and Antarctica caused a rise in sea levels and an associated rise in temperature and rainfall. The changes reached their peak approximately 6,000 years ago. At around 1,000 years ago temperatures stabilised to today's climate. Thus, the climate of the site for the past 1,000 years would probably have been much the same as present day conditions, providing a suitable environment for human habitation.

The climate of Gunnedah is best described as warm and temperate. The average temperature in Gunnedah is 19.0 °C. Annual precipitation averages 637 mm; the wettest month is January (average rainfall 83 mm) and the driest month is September (average rainfall 35 mm). The relatively low annual rainfall (when compared to coastal and hinterlands of NSW) indicates that water reliability would have been focused around higher order streams (such as the Namoi River) and that ephemeral tributaries (first and second order streams) would have experienced extended dry periods.



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KEY

- Development footprint
- Study area
- Main road
- Local road
- Vehicular track

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 7th order
- 8th order
- 9th order

Geology (250k - by unit name)

Quaternary
- Unnamed

Permian
- Werrie Basalt

Carboniferous
- Birken Head Rhyolite
- Bunaleer Dacite
- Gunnan Ignimbrite
- Ourinperee Ignimbrite
- Tranquille Dacite
- Yarralumba Rhyolite
- Undifferentiated
- Unnamed

Devonian
- Mostyn Vale Formation
- Unnamed

Geology of the local area

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 3.2

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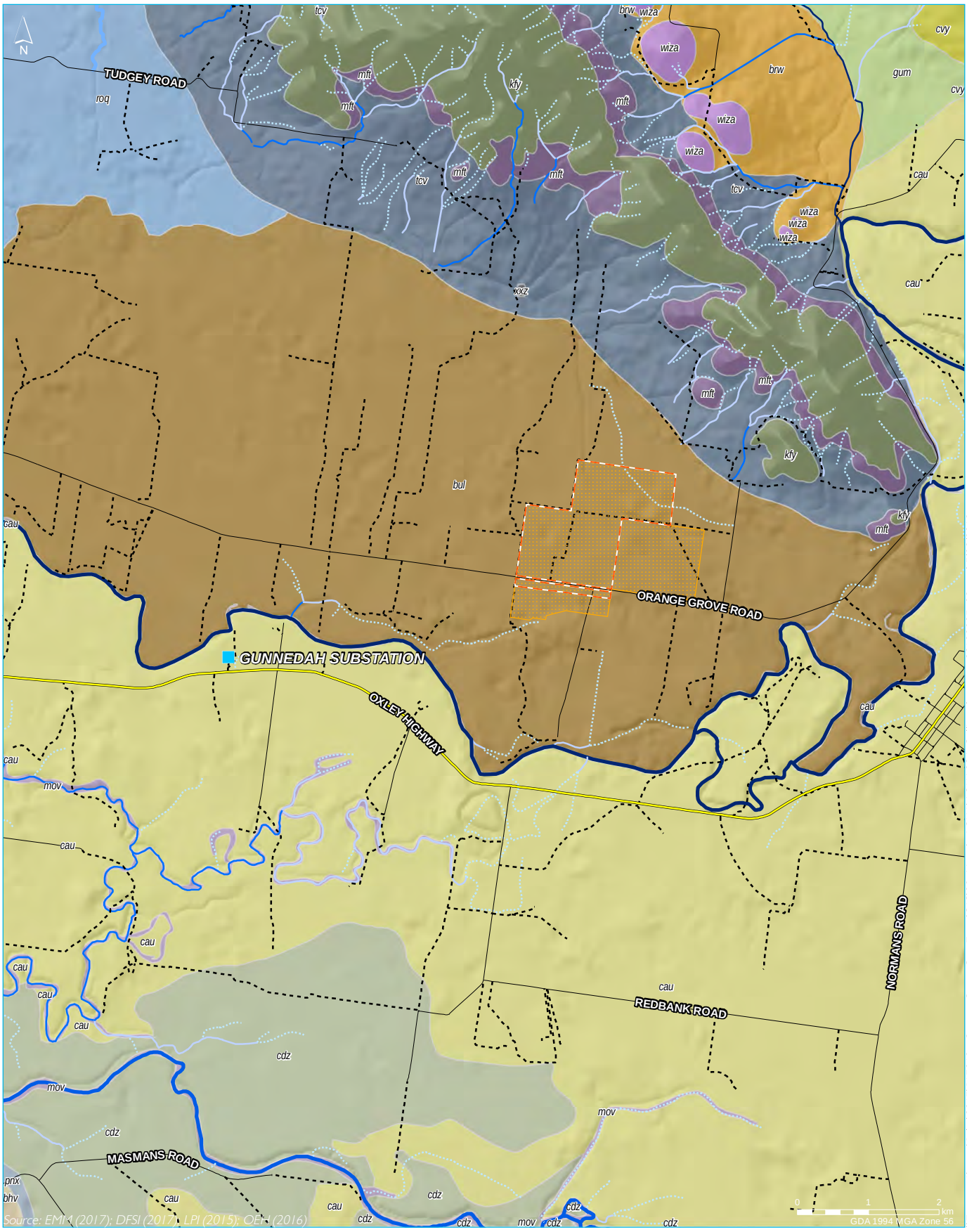

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KEY

- Development footprint
- Study area
- Main road
- Local road
- Vehicular track

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 7th order
- 8th order
- 9th order

Soil landscapes

- xxz - Disturbed Terrain
- bhv - Battery Hill
- brw - Brigalows
- bul - Burburgate
- cau - Carroll Creek
- cvy - Clear View
- cdz - Conadilly
- gum - Gunnembene
- kfy - Kelvin Forest
- mov - Mooki River
- wiza - Mount Winton variant a
- mft - Mountain Forest Road
- pnx - Ponderosa
- roq - Rangira Outwash
- tcv - Tulcumba

Soil landscapes of the local area

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 3.3

EMM

3.6 Flora and fauna

The study area has remnants of pre-colonial ecological communities that would have covered the landscape; however, most of the site has been cleared leaving isolated pockets of trees. The study area can generally be described as containing the remnants of Bimble Box (*Eucalyptus populneus*) and Yellow Box species (*Eucalyptus melliodora*) as woodland or open forest. Both of these species are suitable for Aboriginal scarring or carving.

Pre-colonial biodiversity in the study area would have been greater than today and without the impact of widespread vegetation clearance. Native birds, reptiles and mammals would have occupied the landscape providing various resources for consumption by Aboriginal people.

3.7 Land use and disturbance

The study area has been highly disturbed by past uses associated with livestock grazing, land clearing and intensive cropping. Although intensive cropping is only currently visible in the far northern portion of the study area, the rest of the study area has been subject to the same level of disturbance. This is evidenced by features such as disused irrigation canals which dissect paddocks currently used for grazing. Intensive cropping has involved the following types of disturbance activities:

- the construction of irrigation canals through machine excavation;
- machine grading and levelling the ground surface to control irrigation drainage across paddocks; and
- repeated ploughing.

The extent of disturbance is further described and illustrated in the survey results section of this report (Section 6.5).

Surrounding land uses include both dryland and irrigated broad acre crop production and livestock grazing. The site is currently used for livestock grazing and cropping.

The quality of native vegetation within the study area is tied to past land use. All areas have been subject to extensive clearing, with scattered trees or small clumps of timber interspersed through native and exotic grasslands.

The current land use and disturbance levels are unlikely to have caused considerable erosion and soil movement, mostly because the site is almost flat and would be subject to only minor sheet erosion.

4 Aboriginal heritage context

4.1 Ethno-historical overview

4.1.1 Local population

Information about the socio-cultural structure of Aboriginal society prior to European contact largely comes from ethno-historical accounts made by colonial settlers. These accounts and observations were made after massive social disruption due to disease and displacement. As a result, this information is often contentious, particularly in relation to language group boundaries. Therefore, it is likely that language group boundaries were far more diffuse than the arbitrary demarcations drawn by colonial observers.

According to Tindale (1974) the site falls within the Aboriginal language group boundary of the Kamilaroi. The Kamilaroi language group boundary was recorded as covering one of the largest geographic areas in NSW, roughly spanning from Walgett in the west, north into Queensland, Tamworth in the east and south to the headwaters of the Hunter River.

Oral histories completed for the region show that local Aboriginal communities express a common understanding that the broader landscape is interconnected through complex patterns of movement that are centred around Aboriginal kinship ties (RACAC 2002). Interviewed Aboriginal people have placed particular cultural importance on elements in their landscape, such as flora and fauna, rivers and forests, with community life (RACAC 2002). The site is within the boundary of the Red Chief Local Aboriginal Land Council (LALC).

4.1.2 Living arrangements

Kamilaroi people spent summers along the rivers, exploiting available terrestrial and aquatic food resources. They lived in villages of semi-permanent huts with bark floors and conical roofs during the summer (Cunningham 1839 in AECOM 2010). During winter they moved to areas away from the river where they hunted and trapped animals.

Food sources included freshwater fish, yabbies and mussels from the river. They would have hunted possums, kangaroos, wallabies, bandicoots, emus, bustards, plains turkey, water fowl, lizards and snakes. Plants that provided food and medicine included melons, yams, wild oranges and lemons, emu apples, quandongs, cotton pod seeds, kurrajongs, water lily roots, mulga apples, gruie apples, warrigal cabbages, sorrel sourgrass, trefoil and crowsfoot. Grass seed was a major food source. It was ground and cooked into small loaves (O'Rourke 1997).

4.1.3 Burial customs and ceremony

Through research and Aboriginal consultation for the Maules Creek area, AECOM predicted that burial sites would be chosen in areas where there is soft soil or sand that is easy to dig, most likely near watercourses or in dunes near old lake beds (AECOM 2010, p. 37). Burials were also known to be demarcated by carved trees.

Plate 4.1 Map of Tindale's language boundaries (Note: general location of the site circled in red).

4.1.4 Tools, objects and weapons

Ethno-historical information lists an array of tools and weapons, many of which are unlikely to have survived as artefacts because of their susceptibility to decomposition. Items made of wood are a good example of artefacts that generally do not survive time. Overall, tools and weapons would have included wooden spears, boomerangs, digging sticks, nets, stone fish hooks, fishing line, ground stone axes and chipped stone tools.

Aboriginal tree scarring and carving was well documented in south-eastern Australian. Aboriginal people used stone tools to remove tree bark for the purpose of making a range of items including canoes and canoe accessories (eg seats, paddles and fire platforms), containers and slabs for shelter. Trees were also scarred for toe holds to allow tree climbing and bark strips were removed to manufacture resources such as fishing lines, nets, twine and ropes (DEC 2005).

Aboriginal tree carving was also a part of ceremonial activities such as marking burials, bora grounds and initiation rites (DEC 2005).

4.1.5 Apparel and adornments

Historical sources provide some insight into the traditional customs of the Kamilaroi. For example, there are records of an escaped convict, George Clarke, who lived with a group of Kamilaroi near Boggabri.

He adopted many Aboriginal customs including undergoing cicatrisation or body scarring in which the shoulders, chest and back are cut with a bone knife, then clay is daubed in the wounds to make them heal with prominent scars. He adopted the Kamilaroi clothing of a possum cloak, a belt of twisted human hair, headband of reeds and a string of grass beads around his neck (Boyce 1970).

4.1.6 Ethno-historical implications for archaeology

Aboriginal toolkits indicate that organic materials like wood, bark, shell, bone and fur were integral to subsistence. However, these are not likely to have survived to form part of the archaeological record. Although stone tools are rarely mentioned in historical accounts, many of these were made when modern materials, such as iron and glass, would have been preferred over stone. However, considering the significant pre-historical timeframe of stone tool manufacture, stone Aboriginal objects would be the materials most likely to have survived in the archaeological record.

Carved trees may remain in uncleared areas but would be very rare considering their rarity in the first instance as they were ceremonially created and the ensuing widespread European vegetation clearance. In contrast, Aboriginal scarring practices were generally far more widespread and utilitarian which makes them far more likely to remain in uncleared areas.

4.2 Archaeological context

4.2.1 AHIMS search

A search of the AHIMS register identified eight Aboriginal sites within a 20 km x 20 km area centred on the study area. The results of the AHIMS search are illustrated on Figure 4.1 and listed in Plate 4.2 below. No Aboriginal sites have been registered within the site boundary, however, it should be noted that AHIMS results do not represent an inventory of all Aboriginal sites, just those that have been recorded (typically through targeted surveys). As such, there are a limited number of local sites to help characterise the local archaeological record.

The closest Aboriginal site is an artefact scatter almost 8 km south-west of the site directly adjacent to a first order tributary of the Mooki River. However, most of the stone artefact sites are adjacent to the major water systems of the area comprising the Namoi River and Mooki River. One stone quarry site is registered 11 km to the north-east on the shore of Lake Keepit (AHIMS #20-5-0021) and one scar tree is registered 8 km to the west in an area that appears to be partially cleared native remnant open forest (AHIMS #20-4-0052).

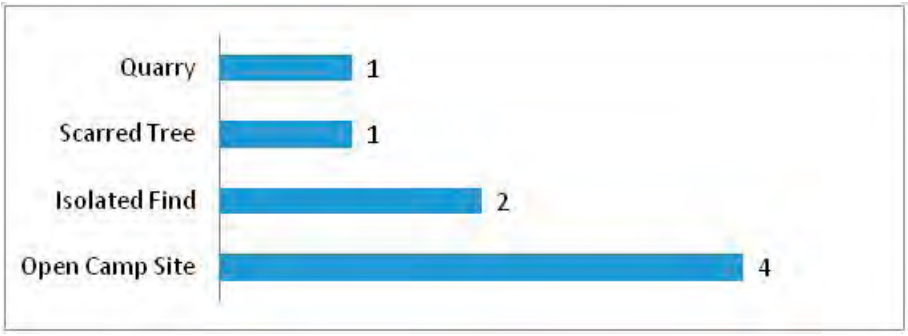
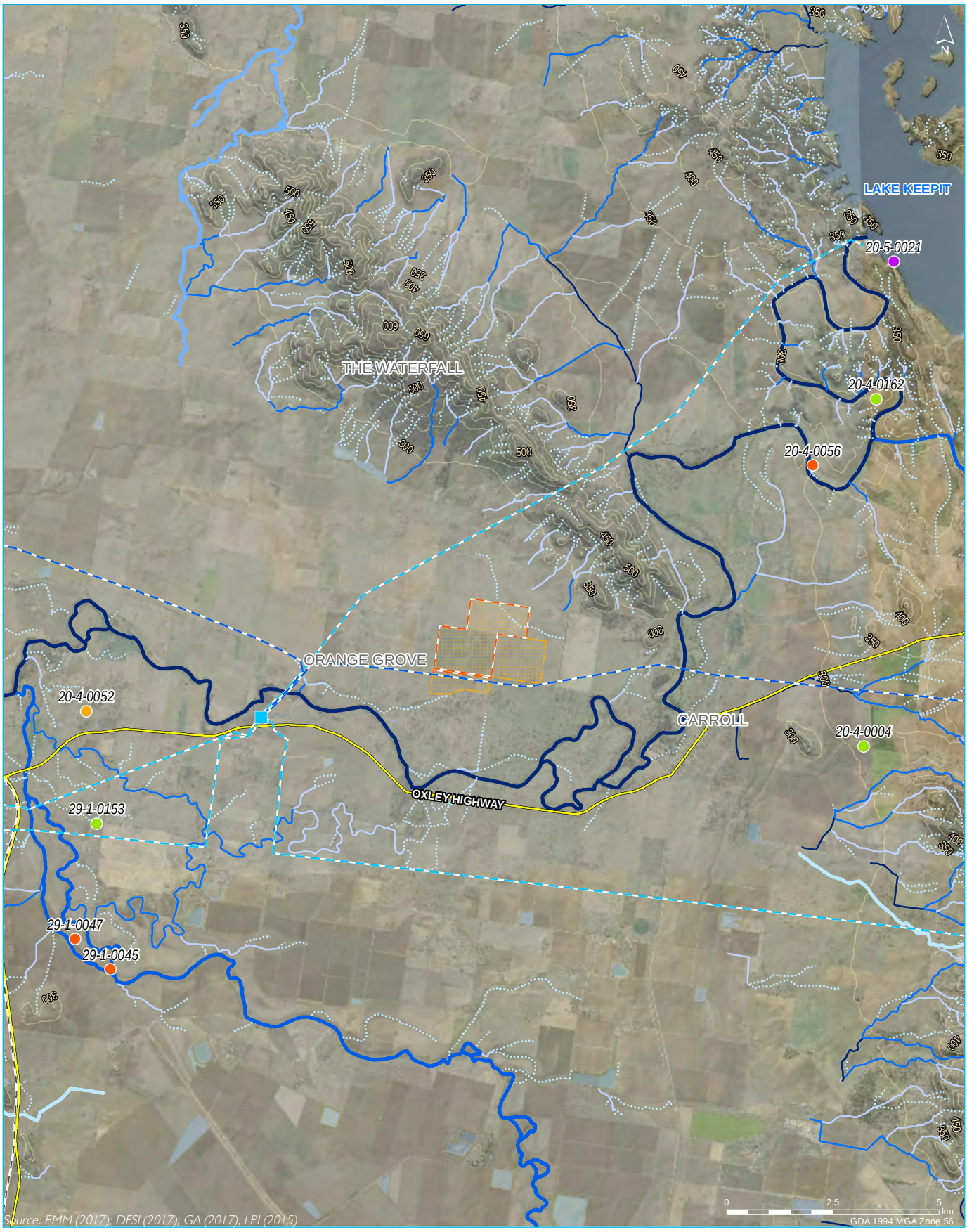


Plate 4.2 AHIMs results site type and frequency



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KEY

- Development footprint
- Study area
- Gunnedah Substation
- 132 kV transmission line
- 66 kV transmission line
- Rail line
- Main road
- Waterbody

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 7th order
- 8th order
- 9th order

- Contour (50m)

AHIMS site type

- Isolated Find
- Open Camp Site
- Quarry
- Scarred Tree

AHIMS results

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 4.1

EMM

4.2.2 Previous investigations

i Overview

There have been a number of archaeological investigations completed in the region. They have largely been in response to developments but also have included government-funded studies. A number of investigations are summarised below with the aim of understanding the archaeological character of both the region and local area.

ii Regional context

a. Brigalow Belt South Bioregion Aboriginal cultural heritage assessment

Arguably the most extensive Aboriginal cultural heritage investigation in the region was the ACHA prepared for Stage 1 and Stage 2 of the Brigalow Belt South Bioregion. The assessment was completed over two years from 2000 to 2002 by the NSW National Parks and Wildlife Service (NPWS) on behalf of the Resource and Conservation Division (RACD) (RACD2000; 2002).

Stage 1 of the assessment focused on the Pilliga State Forest and the Goonoo State Forest. Stage 2 of the assessment focused on the remainder of the Brigalow Belt South Bioregion. The assessment involved the following for each of the stages:

- Aboriginal consultation;
- an oral history and archival record investigation; and
- a cultural heritage field survey, which comprises an Aboriginal site survey, landform mapping and recording native plants of Aboriginal significance.

The aim of the cultural heritage field survey was to sample key targeted areas in the bioregion to identify and record Aboriginal sites. A geomorphological assessment and landform analysis was used to verify an anticipated link between particular landforms in the bioregion and the presence of sites. The site survey for Stage 1 adopted a random sampling approach of the state forests based on the landform divisions. The survey for Stage 2 was non-random and focused on landforms that were considered potentially sensitive based on the Stage 1 results and AHIMS registered site locations. The Stage 2 survey covered various land tenures including State forests, travelling stock routes and reserves, federal property, recreation areas, some private properties and some NPWS Nature Reserves (RACD 2002, p. 27).

A total of 30 landform types were mapped across the bioregion and classed into the following broader landform groups: alluvial landforms; deep stable sand landforms; landforms of higher contour; and terrace group of landforms. The site for the project falls under the category of alluvial landform.

A total of 1,100 Aboriginal sites were recorded during stages 1 (n=250) and 2 (n=850) of the survey. Seventeen site types were identified. Although the frequencies for all site types were not provided in the report, the AHIMS search indicates that open stone artefact sites and modified trees were the most common site type recorded. The report did however identify poorly represented or rare sites which included shelter sites with art (n=2), rock engravings (n=1), ochre quarries (n=1), stone arrangements (n=3) and stone quarries (1). However, it is argued that inadequate survey of certain landforms might be a factor of their rarity (RACD 2002, p.47).

The site frequencies were further divided into the seven subregions of the Brigalow Belt South Region. Within the Liverpool Plains subregion, 311 sites were recorded at the time of the report (pre- and post assessment).

Notably, 668 out of the 1,100 sites (60%) were identified on alluvial landforms, most of which were on floodplain, alluvium, alluvial fan, wetland and alluvial terraces (RACD 2002). The ACHA also identified that most sites occur within 50 m of water sources, while overall approximately 90% of sites were recorded within 200–300 m of water sources.

b. Maules Creek Coal Project

In 2010, AECOM undertook an Aboriginal archaeological and cultural heritage impact assessment as part of the approval process for an open cut coal mine, the Maules Creek Coal Project. The mine is situated 18 km north-west of Boggabri, approximately 50 km north-west of the site. It lies within the Namoi River catchment and contains a number of intermittent creek channels that flow following extensive rain events and hold water for only a few days.

AECOM carried out an archaeological survey over 18 days in 2010, covering the following landform units: creek flats; upper slopes; flats; lower slopes; and steep sided gullies, which identified 97 Aboriginal sites. The majority of the identified sites were stone artefact sites (n=47). The most significant of these was a scatter of approximately 320 artefacts near Lawler's Waterhole within the Leard State Forest. Several large artefact scatters in association with the junctions of intermittent creeks were also identified. Other sites included scar trees (n=21), which were identified predominantly adjacent to the Namoi River, and three grinding groove sites, one fixed and two portable, within the steep sided gully landform.

Altogether, a total of 1,043 artefacts or features were identified during the survey. The landform units with the highest number of artefacts or features were lower slopes (n=361) and steep sided gullies (n=362), followed by flats (n=179) and creek flats (n=110).

AECOM (2011) made the following observations from the assessment:

- Aboriginal sites occur in all parts of the landscape;
- higher density of artefacts are generally found within exposures within 100 m of creeks;
- greater concentrations of stone artefacts are likely to occur closer to high order creeks;
- raw materials included chalcedony, indurated mudstone/tuff, and silcrete, and a smaller percentage of quartz, igneous stone, petrified wood and quartzite; and
- abraded artefacts, such as stone hatchet heads, grindstones and mullers are rare.

c. Tarrawonga Coal Extension

Kayandel Archaeological Services (KAS) prepared an ACHA for Tarrawonga Coal in 2011. The site of the proposed coal mine extension was approximately 15 km north-east of Boggabri (approximately 40 km north-west of the project) in the foothills of the Willow Tree Range, 12 km east of the Namoi River. A number of creeks within the vicinity of the subject area drain into the Namoi River. The area has been subject to vegetation clearance, soil modification and erosion due to agricultural activity since the mid nineteenth century. KAS argued that these disturbances have reduced the potential for archaeological sites to survive (KAS 2011, p.24).

For their survey in March 2011, KAS identified five landform units: ridge top; saddle; upper slope; lower slope; and plain. All landforms were surveyed, although ground surface exposure was variable and tended to be better close to creeks and on eroded vehicle tracks. The rest of the site contained dense vegetation.

Sixty one sites were identified in the subject area. Twenty two were open artefact scatters. Most of these occurred on the plain (n=14) or, to a lesser extent, the lower slopes (n=6). The site with the highest artefact density was identified on the lower slope of Goonbri Creek. Most artefact scatters were low to medium density (up to 61 artefacts in one scatter). Twenty eight isolated finds were identified, primarily on the plain (n=14), while the rest were distributed across the other four landforms. Raw material of the stone artefacts comprised quartzite, chalcedony, siltstone, volcanic and fine grained siliceous (FGS). In addition to flaked stone and cores, one hammer stone and one grinding stone were identified.

Eleven scarred trees were identified, namely on the plain (n=5), lower slope (n=3) and ridge top (n=3). Over 60% of all sites were found within 200 m of Goonbri Creek in association with plain or lower slope landforms.

d. Narrabri Gas Project

As part of the Narrabri Gas Project, Central Queensland Cultural Heritage Management Pty Ltd (CQCHM) (2016) reviewed previous work and conducted an audit of cultural heritage data in the public domain in order to identify gaps in the data, correct obvious errors and identify zones of cultural heritage sensitivity. The gas project is approximately 20 km south-west of Narrabri. It is approximately 950 km^2 and includes part of a forested area known as 'the Pilliga', an area with spiritual meaning and cultural significance for Aboriginal people of the region (CQCHM 2016, p.3). Much of the remaining gas development footprint is situated on agricultural land for dry cropping and livestock.

The report established that there were 90 Aboriginal sites within their data audit, comprising 16 types of sites. These include stone artefact scatters and isolated finds, scar trees, grinding grooves, historic camps, hearths, historic burials, resource places, Aboriginal ceremony, ochre source, rock shelters, shells, stone arrangements and combinations of these sites. This indicates that a wide range of activities took place in the area. The site types are dominated by stone artefacts; however, CQCHM assert that even so, this is likely to be an underrepresentation which will be corrected as further work in the area is undertaken.

CQCHM also noted that Aboriginal sites are generally expected to be closely associated in proximity to water. In the data audit, approximately 26% (n=71) of the recorded Aboriginal sites were within 100 m of watercourses, with a further 35% (n=94) within 200 m. Very low numbers are found on first order waterways.

This model does not apply to static water bodies such as billabongs or lakes and areas of impeded drainage. CQCHM noted that there is no comprehensive digital data set for these. The exception is Yarrie Lake, which is a well-known important water body for Aboriginal people.

iii Local reports

The following reports were gathered from the AHIMS register which were linked to the sites identified in the AHIMS search area for the project.

a. Visit to Ginnagulla Homestead

In 1976, RVS Wright submitted a report on a visit to Ginnagulla Homestead near Gunnedah (refer AHIMS #20-4-0056 in Figure 4.1). He claimed to have identified a stratigraphic association between a flaked stone artefact of igneous rock and extinct marsupial bones (including a diprotodon-like animal, protemnodon and a small macropod) in sediments exposed in the banks of a gully. There is no evidence that a link was established or that the age of the animal bones was ascertained, so the results remain inconclusive based on this report alone.

b. Hard rock quarry

In 1987, Brayshaw McDonald Pty Ltd conducted an archaeological survey of a hard rock quarry 3 km east of Gunnedah (refer to AHIMS #20-4-0052 in Figure 4.1). The survey covered part of an extensive level floodplain and a large rocky outcrop of ryholite known as 'The Knobs'. A number of native eucalypts were noted, many featuring scars which were mostly shallow and irregular. One possible scar tree was identified, but no definite evidence that it was of cultural origin was observed. The scar was oval in shape similar to those created for coolamon production. No other sites were identified and this was attributed to the survey area being a considerable distance from a reliable water course (approximately 1.4 km from the Namoi River).

c. Sand and gravel quarry

In 1992, Resource Planning Pty Limited surveyed the area of a proposed sand and gravel quarry directly adjacent to the Namoi River (refer to AHIMS #20-4-0056 in Figure 4.1). The survey covered a point bar deposit on the Namoi River. Despite being so close to perennial waters of the Namoi River, only one isolated stone flaked artefact of red silcrete was identified. Moreover, surface visibility was high and ranged between 76%–100%. No discussion was provided in the report as to why such limited results were recorded, for example, whether the point-bar landform was likely to have removed or deposited sediments containing archaeological material.

5 Predictive model

5.1 Synthesis of background information

There are particular landscape features that are more likely to have been associated with Aboriginal activities than others. Some of these past activities are traceable through the archaeological evidence left behind, but this is dependent on how favourable the environmental conditions have been to preserve the remains.

The main features that inform archaeological potential include the presence or absence of water, access to food and resources (including stone raw materials), the nature of the terrain and cultural or spiritual associations with a place.

Previous investigations in the region have found that there is a distinct drop-off in Aboriginal site occurrence in areas that extend more than 300 m from water (approximately 90% of sites were recorded within 200–300 m of water). As noted previously, at its closest point, the study area is over 1.3 km from the Namoi River. Locally, the main area that indicates archaeological sensitivity is the relatively flat and accessible terrain adjacent to the Namoi River, which is a reliable water source. However, the study area is a considerable distance from this feature. The first order streams that fall within or close to the study area are ephemeral and would have only supported intermittent occupation during and shortly after rain, but would not have been a reliable water source.

Aboriginal stone artefacts may have been deposited sporadically across the study area but in much lower frequencies and extent than areas adjacent to the Namoi River. If present, stone artefacts are likely to have been displaced from their original location through vegetation clearance and intensive cultivation as part of the agricultural land use history of the site. The site has a very low gradient and therefore stone artefacts are unlikely to have been transported great distances by erosion as can occur on steeper slopes.

The historical land use and disturbance of the site would have been a main factor in the survival of certain archaeological sites. More fragile site types such as stone arrangements or hearths will have been destroyed by farming and cultivation activities and, although identified in the AHIMS search, modified trees are unlikely to be common because of vegetation clearance, although aerial imagery shows that some isolated trees remain.

Locally, outcropping stone raw material (eg tuff, rhyodacite, and andesite) may have been sourced to manufacture stone tools from the nearby hill range 2 km north-east of the study area. However, whether it was of a suitable quality and whether it was transported into the study area is indeterminable.

Other site types such as grinding grooves or engraving are unlikely to occur as the local geology does not permit it.

5.2 Predictive model

5.2.1 Basis of the predictive model

A predictive model of Aboriginal site location has been devised based on the data presented in the preceding sections. In summary, the model has been formed by an analysis of:

- landscape features in the study area and its surrounds;
- pre-colonial period ecological conditions;
- advice from Aboriginal knowledge holders;
- ethno-historical information about Aboriginal life and material culture; and
- the type and distribution of Aboriginal sites described in previous reports and AHIMS data.

The model enabled predictions to be made about the location of Aboriginal sites within the study area and this information guided the archaeological survey.

5.2.2 Predictive model results

The results from the predictive model are summarised in Table 5.1.

Table 5.1 Site type and distribution

Site type	Predictions
Open artefact sites and isolated finds	Open stone artefact scatters and isolated finds are the site types most likely to occur in the site. These may occur anywhere as background scatter, but are most likely to occur within 200–300 m of watercourses; possibly near the ephemeral streams adjacent to the study area. However, being a considerable distance from the Namoi River, the material would be sparsely distributed in infrequent number and possibly displaced by ploughing.
Modified trees	Modified trees (either carved or scarred) may occur where native vegetation has been preserved. The most likely areas include river, creek and wetland reserves but may occur further away but more sporadically where mature native trees occur.
Grinding grooves and grind stones	It is unlikely that grinding grooves occur at the site as there are no suitable rock outcrops and no water sources in close proximity. However, portable grindstones could be present as these items could have been imported into the area.
Hearths	The extent of site cultivation (primarily vegetation clearance and ploughing) has led to widespread disturbance, which is likely to have removed or destroyed archaeological traces of this site type.
Burials	Burials can occur anywhere in the landscape but their identification is very rare. Generally they would be identified by mounds of earth, carved trees or stone markers. Archaeological evidence of burial sites is rare in the region.
Stone arrangements	The level of land use and disturbance in the study area is likely to have destroyed archaeological evidence of this site type.
Rock engravings	These are unlikely to occur in the study area because outcropping sandstone does not occur in the study area.

Table 5.1 Site type and distribution

Site type	Predictions
Middens	Freshwater shell middens may occur along extensive and reliable river systems. It is unlikely that middens will occur in the study area because of the distance to water and its proximity to ephemeral streams only.
Rock shelters	Rock shelters occur in areas with suitable geological formation processes and outcrops of rock. No rock shelters have been identified in the region and it is unlikely that any will be found in the study area as the landscape does not have suitable rock outcrops.
Quarries (stone or ochre)	The level of land use and disturbance in the study area is likely to have destroyed archaeological evidence of this site type. Furthermore, the geology and soils of the site are not known to feature these site types.

6 Archaeological survey

6.1 Overview

EMM Senior Archaeologist, Ryan Desic, accompanied by Aboriginal representatives, Ronald Long, Socks (Red Chief LALC) and Natasha Rodgers, surveyed the study area on 30 November 2017.

The primary aims of the survey were to:

- identify Aboriginal sites or potential Aboriginal places with the assistance of Aboriginal knowledge holders; and
- characterise the landscape to aid predictions of surface and sub-surface archaeological potential.

6.2 Survey strategy

The survey strategy was developed on the basis of the predictive model. A full coverage survey was not adopted primarily because the predictive model indicated that the study area is generally outside areas commonly associated with Aboriginal sites. The factors supporting this prediction are:

- most of the study area is further than 200–300 m from any watercourses (generally the most archaeologically sensitive areas) and over 1.3 km from the Namoi River;
- the watercourses mapped on the borders of the northern and southern portions of the study area are first order streams and ephemeral, which is a landscape feature typically associated with low archaeological sensitivity in non-arid regions; and
- the study area has been cleared and subject to intensive cultivation historically, and currently for the northern portion, which has resulted in widespread ground disturbance.

Considering these factors, the survey sampling strategy was developed proportionate to the predicted low archaeological sensitivity of the site and was guided by the following aims:

- to focus the survey on the land closest to watercourses, approximately up to 300 m from the ephemeral watercourses or drainage depressions;
- to gain a representative sample of land further than 300 m from watercourses where Aboriginal sites are rarely predicted to occur;
- sample a wider geographical area (the study area) than the development footprint so that there was flexibility to refine the development footprint based on the outcomes of the archaeological and ecological surveys;
- to sample areas that have been subject to varying levels of visible ground disturbance (ie the southern grazing paddocks versus the northernmost paddock that is currently cultivated); and
- to inspect mature trees within the study area for evidence of cultural modification.

6.3 Survey methods

6.3.1 General method

The archaeological survey comprised two components:

- a vehicle reconnaissance survey to inspect scattered trees within the study area; and
- a pedestrian survey using the data collection methods described within Section 2.2 of the Code.

6.3.2 Pedestrian survey

The pedestrian survey was undertaken across an unchanging plain landform pattern and therefore a landform division for sampling was not possible. Instead, the survey aimed to retrieve a representative sample of the plain landform across the geographic extent of the study area.

It was originally planned to complete the survey transects generally from east to west at various distances from the Namoi River. However, the ground surface visibility as a result of thick grass was generally too low to employ this method effectively and instead the survey transects focused on exposures regardless of their orientation. Accordingly, where possible, the survey team targeted exposures including vehicle tracks, cattle tracks, scalds, irrigation canal bunds, plough furrows and ground surface halos exposed around trees from cattle.

Survey transects were divided based on the different ground surface visibility conditions encountered in each paddock of the study area. For example, a new survey transect was started when the survey team moved from a thickly grassed paddock into a cropping paddock with large ground surface exposures.

The survey team involved four people who inspected the ground surface of each transect while spaced across 20 m where possible (typically spaced about 5 m apart).

On one occasion, where ground surface visibility was very low in thickly grassed paddocks, the survey team completed a vehicle transect to identify ground exposures which were then inspected on foot. However, effective survey calculations were not made for these transects because they did not meet the requirements of the Code.

6.3.3 Vehicle survey

The primary aim of the vehicle survey was to inspect all mature trees for the presence of Aboriginal carving or scarring within the study area. The vehicle survey was guided by current aerial imagery that clearly showed the locations of all trees within the study area. It involved driving to each mature tree and inspecting it for scars. Where possible scars were observed, closer inspections were performed.

There was no vehicle access to the northern paddock which is currently used for cropping. As such, the survey team inspected mature trees within this area during the pedestrian survey.

6.4 Identification and recording of Aboriginal sites

6.4.1 Site and survey recording methods

Archaeological site recording was completed in accordance with the Code, using a hand-held non-differential GPS unit (GDA94 Zone 56). Site locations were checked using ArcGIS software. Survey transects were accurately mapped by downloading tracks recorded on GPS.

Representative photographs of both the survey transects and site features were taken throughout the survey.

Open stone artefact sites were defined by the presence of one (isolated find) or more (artefact scatter) Aboriginal objects on the ground surface. The boundaries of a site are limited to the spatial extent of the visible Aboriginal objects.

Modified trees (either carved or scarred) can be difficult to identify. Scars commonly occur on trees through natural processes such a branch tears, insect damage, storm and fire damage and faunal damage. Scars also can occur from mechanical damage from vehicles or farming equipment. However, Aboriginal people were recorded using bark and cambium for canoes, containers, shelters and implements amongst other uses. The possible scarred trees recorded during the survey have been assessed against the publication *Aboriginal scarred trees in New South Wales: a field manual* (DEC 2005). Notwithstanding, without expert evaluation (eg by an aborist) it cannot be verified whether the scars recorded during the survey are of natural or Aboriginal origin.

6.5 Survey coverage results

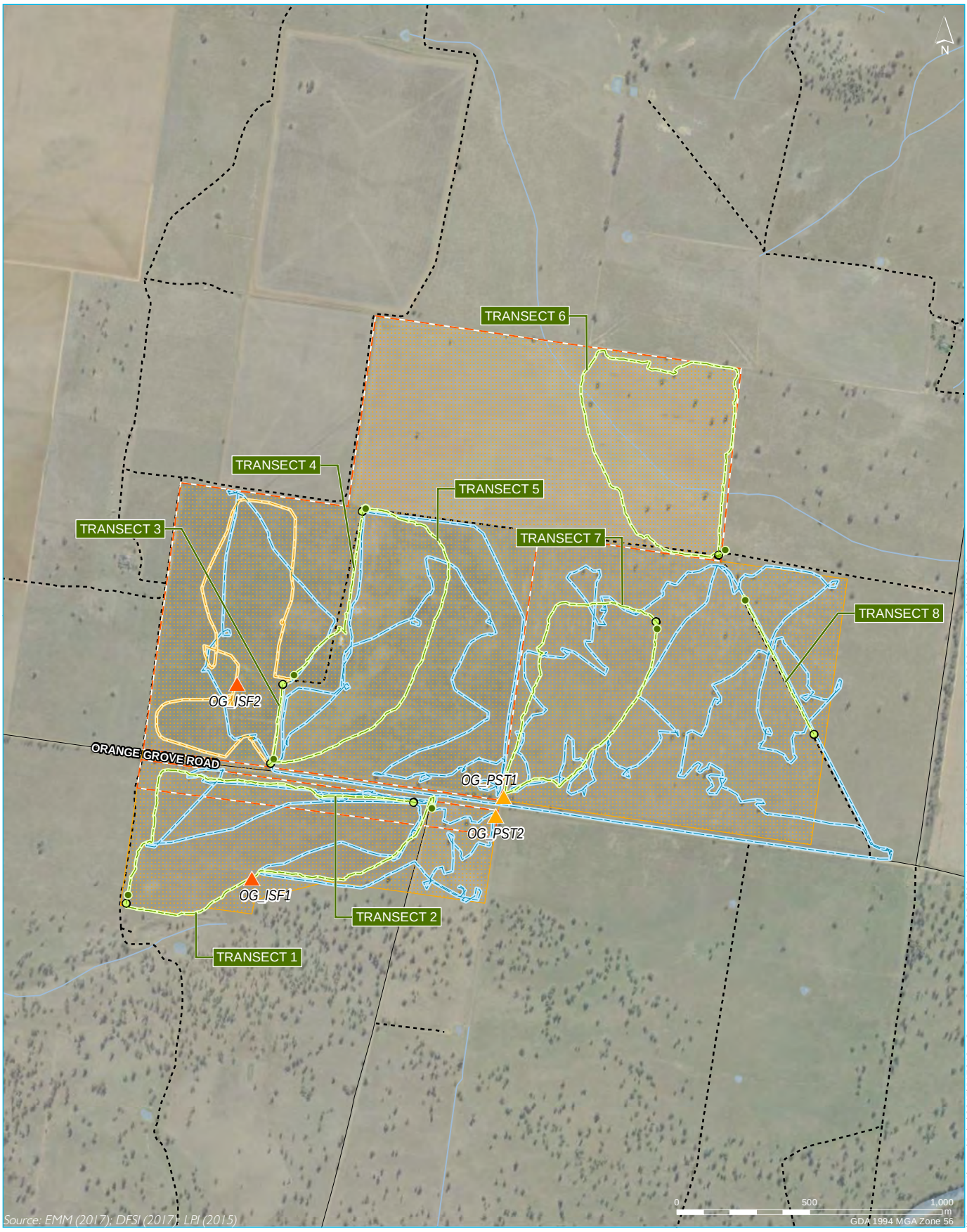
6.5.1 Rationale

The aim of recording and analysing survey coverage data is to determine the effectiveness of the survey. It is evaluated for its effectiveness in identifying the distribution of Aboriginal objects across the landscape, taking into account the potential for archaeological deposits. The percentage of the ground surface exposed in each landform and the visible ground surface within exposures (as ground exposures are often obscured by vegetation, gravels, etc) influences the survey results. For example, an archaeologically sensitive landform surface that is highly exposed by erosion is likely to reveal Aboriginal artefacts, whereas a similar landform that is thickly grassed will obscure surface artefacts if they are present. Overall, calculation of effective survey coverage is used to estimate not only how much area was physically surveyed, but also how favourable the survey conditions were for the identification of Aboriginal sites.

6.5.2 Pedestrian survey coverage results

The pedestrian survey comprised eight transects on a continuous plain landform, totalling 11.2 km across the study area. Figure 6.1 presents the survey transects logged by GPS but represents only where the GPS holder walked during the survey. It does not represent the transect width covered by the survey team which sometimes involved people separating beyond 20 m to inspect exposures or trees along the general transect alignment.

Landform coverage data is summarised in Table 6.1. Examples of the varying ground surface exposure and visibility conditions are shown in Plate 6.1 to Plate 6.14.



KEY

- Development footprint
- Study area
- Local road
- Vehicular track
- Watercourse / drainage line
- Waterbody

Heritage survey results

- Isolated find
- Tree with scar

Heritage survey effort

- Pedestrian survey transect
- Vehicle/pedestrain transect
- Vehicle tree survey

Field survey results

Orange Grove Sun Farm
Aboriginal cultural heritage assessment
Figure 6.1

EMM

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Table 6.1 Pedestrian survey effective coverage summary

Transect	Length (m)	Width (m)	Area (m²)	Exposure	Visibility	Effective coverage area (m²)	Effective coverage %	Extent of rock outcrop %	Ground cover types	Exposure types	Vegetation	Disturbance
T1	1545	20	30900	30%	70%	6489	21	0	Grass	Vehicle tracks; irrigation canal bunds; cattle tracks; scalds	Grassland	Extensive clearing; intensive historical cultivation
T2	1532	20	30640	10%	70%	2145	7	0	Grass; isolated native trees	Irrigation canal bunds; scalds; tree halos from cattle	Grassland	Extensive clearing; intensive historical cultivation
T3	320	20	6400	50%	50%	1600	25	0	Grass; gravel on vehicle tracks	Vehicle tracks; irrigation canal bunds; cattle tracks; scalds	Grassland	Extensive clearing; intensive historical cultivation
T4	808	20	16160	50%	70%	5656	35	0	Grass	Cattle tracks; scalds	Grassland	Extensive clearing; intensive historical cultivation
T5	1576	20	31520	5%	50%	788	3	0	Grass	Scalds	Grassland	Extensive clearing; intensive historical cultivation
T6	2587	20	51740	80%	80%	3314	64	0	Crops; isolated native trees	Scalds; tree halos; plough furrows	Cropping	Extensive clearing; observable intensive cultivation
T7	2214	20	44280	10%	90%	3985	9	0	Grass; isolated native trees	Cattle tracks; scalds; tree halos	Grassland	Extensive clearing; intensive historical cultivation
T8	603	20	12060	70%	90%	7598	63	0	Grass	Vehicle tracks; scalds	Grassland	Extensive clearing; intensive cultivation currently in practice

All of the survey transects (apart from Transect 6) covered grazing paddocks covered by grass and varying numbers of isolated trees or trees in small pockets. Although grass covered the grazing paddocks extensively, the survey team was able to focus on areas with more favourable ground surface visibility including, vehicle and cattle tracks, scalds, irrigation canal bunds and tree halos. Effective coverage of these transects ranged from 3% in heavily grassed areas (Transect 5 - refer to Plate 6.8) to 63% in areas with larger exposures (Transect 8 - refer to Plate 6.14). The average effective coverage for the grazing paddocks was 23%, however, if the survey was not targeted towards exposures it would have been much lower (estimated at about 5%). At a superficial level these paddocks appear relatively undisturbed except from widespread vegetation clearance. However, the frequently encountered irrigation canals dissecting the paddocks show that the areas were previously used for intensive cultivation and have since been reverted to grazing paddocks.

Transect 6 covered a paddock that is currently used for cropping but also contained isolated trees (refer to Plate 6.9 and Plate 6.10). The survey team focused on the land that was mapped to be near an ephemeral stream, however it was actually an almost imperceptible depression (Plate 6.11). Effective coverage was relatively high at 64%, but the favourable conditions were isolated to the paddock edges. The cropped paddocks alone were unfavourable as they presented large plough furrows, overturned soil and cropping stalks. As such, further survey of the cropped paddock away from the depression was not pursued because of its highly disturbed nature and poor ground surface visibility conditions.

Plate 6.1 Transect 1 showing vehicle track exposure (view south-west)

Plate 6.2 Transect 1 with an irrigation canal in the foreground (view north)

Plate 6.3 Transect 2 showing thick grass coverage (view south)

Plate 6.4 Transect 2 showing exposure beneath tree (view north-east)

Plate 6.5 Transect 3 showing vehicle track exposure (view north-east)

Plate 6.6 Transect 4 showing farm shed (view south-east)

Plate 6.7 Transect 4 showing cattle track exposure (view north-east)

Plate 6.8 Transect 5 showing thickly grassed paddock (view south)

Plate 6.9 Transect 6 showing cultivated paddock and large exposures (view north)

Plate 6.10 Transect 6 showing cultivated paddock and large exposures (view east)

Plate 6.11 Transect 6 facing north to where a first order stream is mapped. Also showing the general condition of the northern paddock

Plate 6.12 Transect 7 showing an area with high ground surface visibility (view north)

Plate 6.13 Transect 7 showing thickly grassed paddock (view north)

Plate 6.14 Transect 8 showing wide vehicle track exposure (view south-east)

6.5.3 Vehicle survey coverage

The vehicle survey to inspect the trees in the study area is illustrated in Figure 6.1. As noted previously, the trees in the northern paddock were inspected on foot as part of survey effort for Transect 6.

The trees inspected as part of the vehicle survey were predominantly native eucalyptus trees including Yellow Box (*Eucalyptus melliodora)* and Bimble Box (*Eucalyptus populnea)* but also included sporadic occurrences of exotic trees such as Peppercorn trees. The trees were of varying ages, some of which were clearly regrowth (Plate 6.15) but there were also mature trees; the largest typically occurring along fence lines which may not have been historically cleared (Plate 6.16). A number of trees featured natural scars including those from stock damage and branch tears (Plate 6.17 and Plate 6.18).

Tree scars that are potentially of Aboriginal origin are discussed in Section 6.6.

Plate 6.15 An example of a regrowth tree (view north-east)

Plate 6.16 An example of a mature tree situated along a fence line (view south)

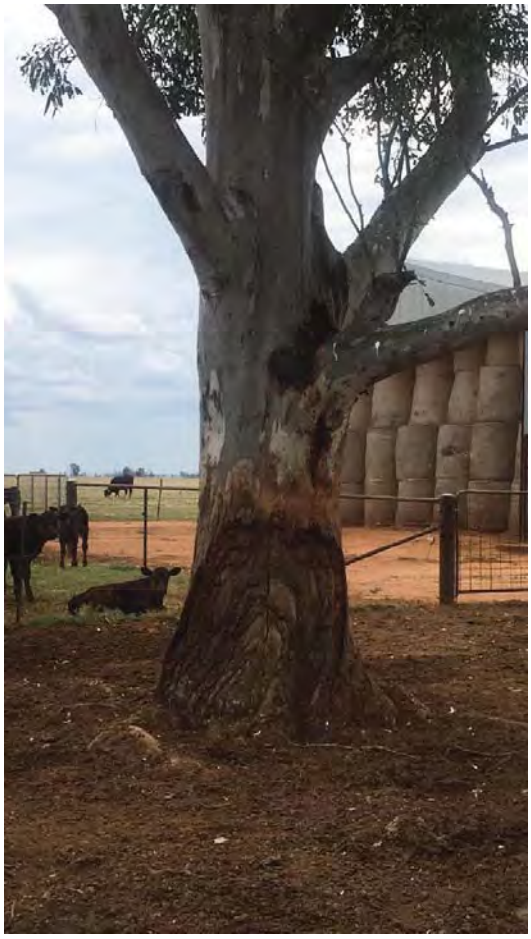


Plate 6.17 An example of scar from stock damage

Plate 6.18 An example of scar from a branch tear shown by a cavity extending into the tree

6.6 Aboriginal site results

6.6.1 Overview

The survey team identified two isolated stone artefacts and two trees with scars that are possibly of Aboriginal origin. The sites are described below and a summary of the information is provided in Table 6.2. The site locations are included on Figure 6.1.

Table 6.2 Site results summary

Site name	Site type	Features	Survey transect	Landform	Easting (GDA 56)	Northing (GDA 56)
OG_ISF1	Isolated artefact	Indurated mudstone/tuff (IMT) flake; max length 40 mm; identified in vehicle track exposure	Pedestrian Transect 1	Plain	250403	6570535
OG_ISF2	Isolated artefact	Chert flake; max length 80 mm; identified in highly disturbed irrigation canal bund	Vehicle/pedestrian Transect 2	Plain	250346	6571267
OG_PST1	Potentially scarred tree	One undetermined scar	Vehicle Transect 1	Plain	251321	6570770
OG_PST2	Potentially scarred tree	Two undetermined scars	Vehicle Transect 1	Plain	251351	6570841

6.6.2 OG_ISF1

Orange Grove Isolated Find 1 (OG_ISF1) was identified on a vehicle track exposure on survey Transect 1 (Plate 6.19 and Plate 6.20). The site comprises a singular flake made from indurated mudstone/tuff (IMT) with its distal edged chipped from recent damage. OG_ISF1 is outside of the development footprint.

Plate 6.19 Close up of OG_ISF1

Plate 6.20 Location of OG_ISF1 marked by blue flag (view south-west)

6.6.3 OG_ISF2

Orange Grove Isolated Find 2 (OG_ISF2) was identified on an irrigation canal bund exposure on survey Transect 1 (and Plate 6.21 and Plate 6.22). The site comprises a singular flake made from chert. OG_ISF2 is within the development footprint.

Plate 6.21 Close up of OG_ISF2

Plate 6.22 Location of OG_ISF2 marked by pink flag (view south)

6.6.4 OG_PST1

Orange Grove Possible Scar Tree 1 (OG_PST1) (Plate 6.23 and Plate 6.24) was identified just outside the south-eastern extent of the development footprint, bordering on Orange Grove Road. The scar was identified on a mature Bimble Box (*Eucalyptus populnea)* tree approximately 1 m from base of the tree.

The scar is approximately 60 cm by 40 cm, but the scar overgrowth extends up to 30 cm. The scar features a smooth dry face, a regular shape and overgrowth but no definite attributes were identified such as stone axe marks. Furthermore, the scar is not positioned on a bend of the tree that would suggest a 'curved pre-form' scar to make a container. Notwithstanding, the tree is in good condition without further scarring and signs of natural or incidental scars were not obvious.

As discussed in Section 6.4.1, Aboriginal scar trees can be difficult to distinguish from natural or incidental causes based on visual inspection alone. For this reason the tree has been recorded as a conservative measure but remains undetermined.

Plate 6.23 View of scar on OG_PTS1 (view south-west)

Plate 6.24 Context of OG_PTS1 (view south)

6.6.5 OG_PST2

Orange Grove Possible Scar Tree 2 (OG_PST2) (Plate 6.25 and Plate 6.26) was identified in the north-eastern corner of a paddock of the southern portion of the study area, bordering on Orange Grove Road. The site is within the development footprint. The scar was identified on a mature Bimble Box (*Eucalyptus populnea*) but the height of the scar above the ground could not be determined. This was because the tree is located within the mounded bund of an irrigation canal which has obscured the natural base of the tree.

The scar is 170 cm in length and 50 cm across its widest part, but the scar overgrowth extends up to 30 cm. Similar to OG_PST1, the scar features a smooth dry face, a regular shape and overgrowth but no definite attributes were identified such as stone axe marks. Furthermore, the scar is not positioned on a bend of the tree that would suggest a 'curved pre-form' scar. There were discrete signs of insect damage but not to the extent that would confirm such damage as the cause of the scar.

This same tree has another scar of a similar height and of similar dimensions (Plate 6.27 and Plate 6.28). However, the second scar has an irregularly shaped base that extends into the currently modified ground level which has somewhat obscured the scar.

The scars may have been caused by trauma if impacted during the construction or maintenance of the irrigation canal or by faunal damage. However, scarring caused by Aboriginal practices could not be discounted on basic visual inspection alone. Subsequently, the tree has been recorded as a conservative measure but remains undetermined.

Plate 6.25 View of scar on OG_PTS2 (view south-west)

Plate 6.26 Location of OG_PTS2 showing the tree sitting within a irrigation canal bund

Plate 6.27 Additional scar to the right of the main scar (facing south)

Plate 6.28 View of additional scar showing the irregular shape of the base that extends into the modified ground level

6.7 Discussion of survey coverage and Aboriginal site results

The pedestrian survey covered a representative sample of the study area. Considering that most of the study area is covered in grass, it is unlikely that adding more transects to the survey effort would have changed the results obtained, as the survey team would have been met with continuous areas of low ground surface visibility. Furthermore, because the study area only features a single landform element, the 11.2 km of land walked by four people across the landscape is considered to have provided sufficient opportunity to characterise archaeological potential of the study area, particularly as areas with higher ground exposure were targeted.

The two isolated artefacts identified across the surveyed areas are likely to be characteristic of the archaeological potential in unsurveyed areas. That is, stone artefacts may occur very sporadically (as isolated artefacts) in an unpredictable nature representative of background scatter. OG_ISF1 is within 200 m of an ephemeral tributary of the Namoi River, which was the area most likely to contain artefacts according to the predictive model. However, OG_ISF2 is approximately 800 m from any water which is far less likely to feature artefacts.

As such, the limited results leave little room for further discussion about stone artefact distribution in relation to water. Furthermore, the widespread disturbance caused by intensive cultivation means that the present location of stone artefacts are unlikely to represent the initial location of their deposition.

The survey effectively identified the widespread previous and current land use disturbance by historical vegetation clearance followed by intensive cultivation. Because of the level of disturbance, if more fragile site types such as stone arrangements and hearths once existed, they would have been destroyed. Apart from modified trees, the only sites that have the potential to observably remain in the study area are stone artefacts, which would have been displaced through cultivation activities.

Further survey would be uninformative and further investigation through test excavation is not warranted given the predicted very low frequency of stone artefacts, the widespread land disturbance and the considerable distance (minimum 1.3 km) from the study area to the Namoi River (the nearest reliable watercourse). This determination is in keeping with Section 3.1 of the Code, which states that sub-surface investigation is required if sub-surface Aboriginal objects with potential conservation value have a high probability of being present in an area. This does not apply to the study area.

The vehicle survey and pedestrian survey transects used to identify modified trees were effective because the trees were clearly visible in the field and were able to be cross-referenced with aerial imagery. Although scar trees are most commonly found near water, they are also known to occur more widely across the landscape in contrast to areas such as the eastern parts of NSW (DEC 2005, p.60). This is also evidenced within the AHIMS search area for this project where another potentially scarred tree has been recorded 8 km to the west of the site despite being over 800 m from any water source. Furthermore, both of the trees recorded occur adjacent to fence lines near a road, which is also less likely to have been subject to historical tree removal.

7 Significance assessment

7.1 Defining heritage significance

Heritage sites, objects and places hold value for communities in many different ways. The nature of those heritage values is an important consideration when deciding on how to manage a heritage site, object or place, and balance competing land-use options.

The main heritage values assessed are summed up in an assessment of 'Cultural Significance'.

The primary guide to the management of heritage places is the Australia International Council on Monuments and Sites (ICOMOS) *Burra Charter* (ICOMOS 2013). The *Burra Charter* defines cultural significance as follows:

> Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups (ICOMOS 2013).

The purpose of this assessment is to examine various aspects of Aboriginal heritage for the purpose of assessing possible development impacts. The assessment considers Aboriginal objects and sites, but not places as none were found.

7.2 Socio-cultural and historic value: significance for the Aboriginal community

7.2.1 Intangible values

'Non-archaeological Aboriginal heritage values' refers to places which have meaning in accordance with memory or tradition, but are not necessarily associated with cultural objects. These sorts of places are described as "intangible sites" and include any socio-cultural or historic values related to historically important persons, events, phases or activities in the Aboriginal community. Aboriginal cultural knowledge is defined as:

> ...accumulated knowledge which encompasses spiritual relationships, relationships with the natural environment, and the sustainable use of resources, and relationships between people, which are reflected in language, narratives, social organisations, values, beliefs, and cultural laws and customs... (DECCW 2010).

The project RAPs were consulted to determine whether any socio-cultural heritage value relates specifically to the site boundary regardless of archaeological evidence.

To date, no information has been received that identifies specific heritage values related to the Aboriginal sites and objects in the site boundary. No historical connection has been identified specifically about the development footprint. Notwithstanding, the Namoi River nearby has historical connections with local Aboriginal people, such as historical knowledge about hunting and fishing and ceremonial practices (pers comm Ronald Long).

7.2.2 Values associated with Aboriginal sites

Aboriginal heritage sites with archaeological evidence are all of value to the Aboriginal community through the tangible connection that they represent with pre-colonial Aboriginal land use. It is acknowledged that the Aboriginal community considers Aboriginal objects as culturally significant items.

No sites were identified as having specific socio-cultural or historic value and therefore the sites in this report have not been attributed with a level of significance for socio-cultural or historic values.

7.3 Scientific value

7.3.1 Overview

The following scientific values are identified as 'low', 'moderate' or 'high' for each identified Aboriginal site with an overall rating identified based on the results of each individual assessment. The significance criteria are outlined below:

- Research potential: the potential of a site to contribute to the present understanding of society and the human past.
- Rarity and representativeness: the frequency of a site type and how the sites relate to the wider archaeological record. The results may be due to sites being uncommon because of the related activity or preservation, or they are uncommon now because of ongoing site destruction from more recent development.
- Integrity: the level of disturbance or intactness of a site and how this may affect research potential.
- Education potential: the potential of a site to be used as an educational tool. This usually includes sites with easily identifiable and accessible characteristics that are good representative examples.

The scientific significance of the sites in the study area are summarised in Table 7.1. Both of the isolated artefacts are of low scientific significance because they are a very common site type and they are also within a highly disturbed context, which means little further knowledge could be gathered from their location in the landscape.

The scar trees have not been verified as Aboriginal objects. As such, the assessment of significance would only apply if these were confirmed to be Aboriginal objects. Based on the limited information available at present, the assessment of significance relates only to the potential presence of scar trees in the landscape rather than the technical information relating to the scars.

Table 7.1 Summary of scientific significance

Site name	Site type	Research potential	Rarity and representativeness	Integrity	Educational value	Overall archaeological significance rating
OG_ISF1	Isolated artefact	Low: The artefact is a common type in a disturbed surface context. It would not contribute to further knowledge.	Low: The site is an artefact with a common material type and artefact type locally and regionally.	Low: The site is in a highly disturbed context.	Low: The site is generally not exemplary of stone artefacts.	Low: The site is a common isolated find in a disturbed context.
OG_ISF2	Isolated artefact	Low: The artefact is a common type in a disturbed surface context. It would not contribute to further knowledge.	Low: The site is an artefact with a common material type and artefact type locally and regionally.	Low: The site is in a highly disturbed context.	Low: The site is generally not exemplary of stone artefacts.	Low: The site is a common isolated find in a disturbed context.
OG_PST1	Potentially a scar tree	Undetermined: Research potential would be determined only if the scar was of verified Aboriginal origin.	Moderate: Scar trees are more common regionally than for example in the coastal regions of NSW. Notwithstanding, they are rarer than stone artefact sites (the most common site type) and are rare locally based on the AHIMS search results.	High: If verified as an Aboriginal scar tree, the tree and scar is in good condition.	High: Scar trees generally have high education value as their current form and pre-historical use is easily described and conveyed visually.	Presently undetermined: If determined to be a scar tree, the site is likely to be of moderate archaeological significance
OG_PST2	Potentially a scar tree	Undetermined: Research potential would be determined only if the scar was of verified Aboriginal origin.	Moderate: Scar trees are more common regionally than for example in the coastal regions of NSW. Notwithstanding, they are rarer than stone artefact sites (the most common site type) and are rare locally based on the AHIMS search results.	Undetermined: One of the two scars present is obscured by an earth mound built around its base. It is therefore unknown whether the scars may be from trauma damage or past Aboriginal activities.	High: Scar trees generally have high education value as their current form and pre-historical use is easily described and conveyed visually.	Presently undetermined: If determined to be a scar tree, the site is likely to be of moderate archaeological significance.

8 Impact assessment

8.1 Sources of development impact

The project design and construction elements are described in Chapter 1.

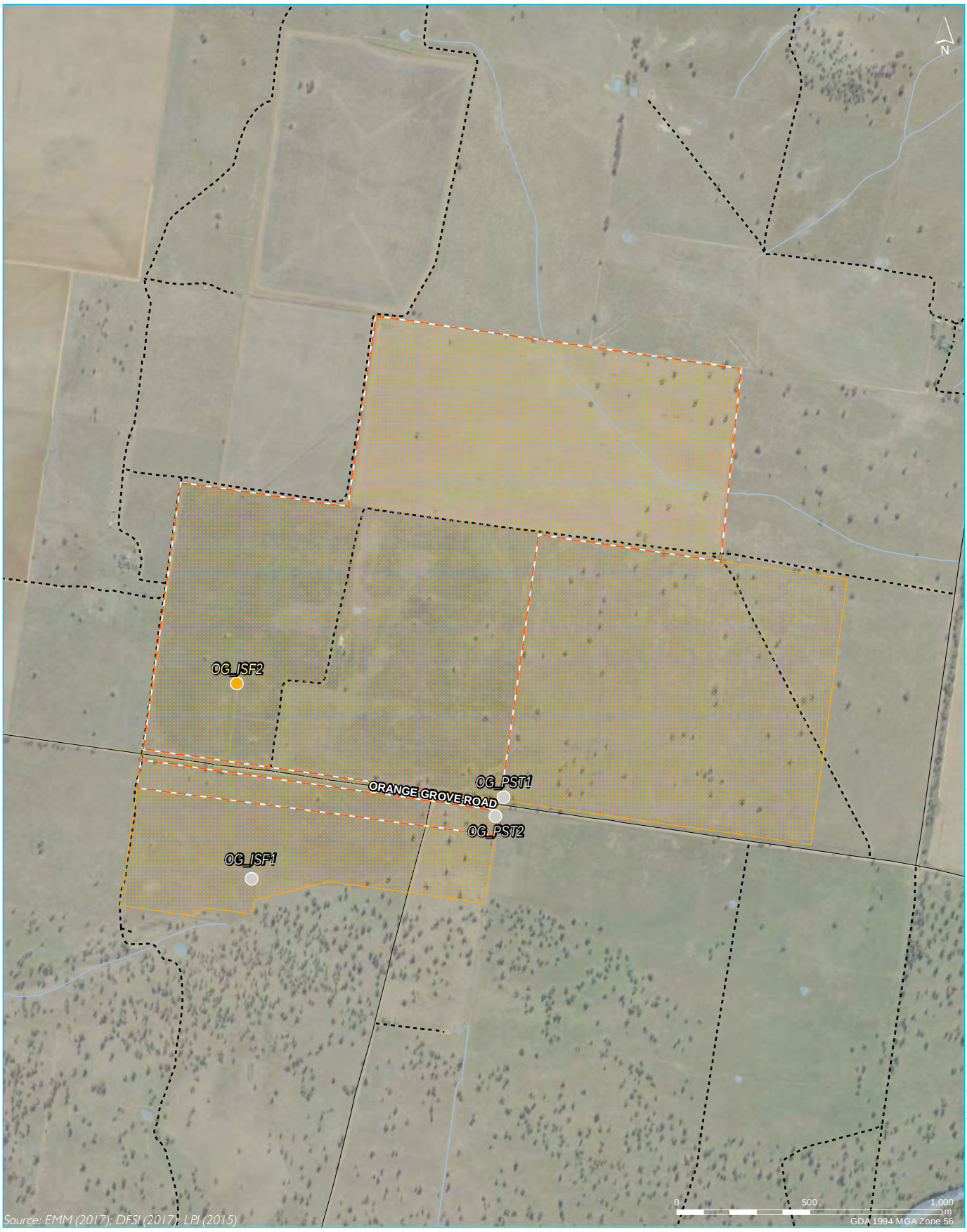
The following ground disturbance activities proposed as part of the project have the potential to disturb known and/or unknown Aboriginal objects in the development footprint:

- discrete areas of ground disturbance associated with the establishment of a temporary construction site compound;
- construction of access tracks and boundary fencing;
- construction of foundations for the PV solar panels (ie driving or screwing posts into the ground);
- trenching for underground cabling; and
- ground disturbance associated with the establishment of connection infrastructure between the project electrical switchyard and Transgrid's 132 kV transmission line.

Overall, the project will not involve broad scale earthworks to prepare the ground surface because the landscape is already level and can accommodate the project infrastructure without significant ground preparation.

8.2 Impacts to sites

The project will impact one isolated artefact (OG_ISF2) in the development footprint and will avoid both possible scar trees (OG_PST1 and OG_PST2) and isolated artefact OG_ISF1. The impacts to Aboriginal sites are summarised in Table 8.1. The development footprint in relation to the known sites is shown in Figure 8.1.



KEY

- Development footprint
- Study area
- Local road
- Vehicular track
- Watercourse / drainage line
- Waterbody

Level of impact

- Total disturbance
- None

Impact assessment

Orange Grove Sun Farm

Aboriginal cultural heritage assessment

Figure 8.1

EMM

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The impacts to the isolated artefact OG_ISF2 are considered to constitute disturbance, as the artefact would be moved locally from its recorded setting rather than resulting in loss, which would only apply if the artefact would be removed completely or destroyed (for example by broad scale earthworks such as mining).

Table 8.1 Potential impacts to Aboriginal sites

Site name	AHIMS number	Site type	Significance	Type of harm	Degree of harm	Consequence of harm
OG_ISF1	20-4-0819	Isolated artefact	Low	None	None	Not applicable
OG_ISF2	20-4-0818	Isolated artefact	Low	Direct	Total disturbance	Total loss of value
OG_PST1	20-4-0817	Potentially a scarred tree	Moderate	None	None	Not applicable
OG_PST2	20-4-0820	Potentially a scarred tree	Moderate	None	None	Not applicable

8.3 Potential impacts to unidentified sites

As discussed in Section 6.7, stone artefacts may occur very sporadically (probably as isolated artefacts) outside of the survey transect paths in an unpredictable pattern representative of background scatter. These artefacts would be in a highly-disturbed context and areas predicted to be of low archaeological significance similar to known sites OG_ISF1 and OG_ISF2. It is acknowledged the project may disturb a limited quantity of artefacts, which is similar or less than the level of disturbance already caused by intensive cultivation practices.

8.4 Measures to minimise harm and alternatives

The initial decision to place the project in an area that is away from reliable water, and which has been previously cleared and cultivated, is arguably the most significant measure to minimise harm to Aboriginal sites and objects. Accordingly, undisturbed land that would typically have higher archaeological potential will not be disturbed to accommodate the project.

The development footprint was refined from a concept design that covered the entire study area. The decision to refine the development footprint was based on the outcomes of the archaeological and ecological assessments so as to minimise environmental impacts. As such, the possible scar trees and isolated artefact OG_ISF1 will be avoided.

Additionally, the extent of developing practical measures to avoid harm must be weighed against the significance of the Aboriginal sites that are likely to be harmed by the project. The study area has been subject to widespread disturbance through intensive cultivation of the ground surface. The extent of disturbance that has already occurred has significantly reduced the archaeological significance in the study area.

The project cannot be altered to avoid the isolated artefact OG_ISF2 without having a significant impact on the preferred project infrastructure layout, as the sites are placed where PV solar panel arrays are proposed to be installed.

8.5 Cumulative impacts

The surrounding region is characterised by established open farmland characterised by historical vegetation clearance followed by a range of activities ranging from livestock grazing to intensive cultivation. Other than the more isolated developments of coal mines and pipeline projects in the region, the most widespread impact in the region has occurred from establishing and maintaining agricultural land. These activities are likely to have removed many modified trees, reduced the archaeological integrity of many open stone artefact sites and would have destroyed more fragile site types such as hearths, stone arrangement and burials.

Considering the above, the development footprint has already been subject to the most damaging activities to Aboriginal sites and therefore the project will not contribute significantly to further cumulative impacts within the site boundary.

The impact of the project will also be minor when considering intergenerational equity, that is, the intention to ensure present generations consider future generations when making management decisions as the impact of the project will be minor.

9 Management measures

9.1 Aboriginal heritage management framework

This section describes the management measures for identified Aboriginal cultural heritage values in the study area. The management measures proposed in this chapter respond to:

- the impacts identified in the preceding chapter;
- the assessed significance of the Aboriginal sites;
- the views of the Aboriginal community as represented by the RAPs;
- the need to address intergenerational equity in the values of Aboriginal heritage;
- the need to protect sites not impacted by the project but under the care of the proponent; and
- the need to mitigate the loss and disturbance of potential Aboriginal sites and Aboriginal objects.

The management measures proposed in response to the impacts and Aboriginal site significance levels comprise the following:

- active protection of Aboriginal sites close to the development footprint; and
- procedures that specify actions to be taken in the unlikely event of discovery of human skeletal remains and discovery of Aboriginal sites.

9.2 Management measures

9.2.1 Aboriginal heritage management plan

An Aboriginal Heritage Management Plan (AHMP) will be developed in consultation with DPE, the RAPs and OEH. It will provide details of:

- all Aboriginal sites identified during the archaeological investigation for the project;
- management measures and their progress towards completion;
- continuing consultation and involvement of the RAPs;
- protocols for newly identified sites;
- protocols for suspected human skeletal material; and
- provisions for review and updates of the AHMP.

The AHMP will be prepared after project approval, and in addition to the above points, will address all relevant conditions of approval. The AHMP will provide the details of the management measures outlined in the sections below.

9.2.2 Avoidance

Orange Grove Possible Scar Tree 1 (OG_PST1) and Orange Grove Isolated Find 1 (OG_ISF1) will be passively avoided without the requirement for fencing and signage. OG_ISF1 is approximately 200 m south of the development footprint and OG_PST1 is on the opposite side of the fence that forms the south-eastern boundary of the development footprint.

Orange Grove Possible Scar Tree 2 (OG_PST2) is within the development footprint, but will be avoided during detailed design of the project infrastructure layout and will not be impacted by the project. This site will be protected by suitable fencing and signage.

9.2.3 Unmitigated impacts

Orange Grove Isolated Find 2 (OG_ISF2) will be impacted by the proposed ground disturbance as part of the construction stage of the project. The site is a single stone flake of low archaeological significance. The construction stage of the project is likely to further displace the artefact from its already disturbed location. Overall, the artefact will remain in the general vicinity of its recorded location. As the site is of low archaeological significance and has been sufficiently recorded, salvage in the form of collection is not considered warranted.

9.3 Special procedures

9.3.1 Aboriginal ancestral remains

It is important that all personnel working on the project during construction be briefed on the possibility and the appropriate protocols to follow if human remains are found, as well as, what to do if other Aboriginal cultural material is encountered.

In the event that known or suspected human remains are encountered during the project's construction, the following procedure will be followed as soon as the suspected remains are discovered:

- all work in the immediate vicinity will cease and the find will be reported to the work supervisor who will advise the site supervisor or other nominated senior staff member;
- the site supervisor or other nominated senior staff member will promptly notify the police and the state coroner (as required for all human remains discoveries);
- the site supervisor or other nominated senior staff member will contact OEH for advice on identification and management of Aboriginal skeletal material; and
- if it is determined that the skeletal material is of Aboriginal ancestry, the RAPs will be contacted and consultative arrangements will be made to discuss ongoing care or reinterment of the remains.

9.3.2 Discovery of new Aboriginal sites

i Procedure

In the event of discovery of new Aboriginal sites within the development footprint, the following procedure will be followed:

- the immediate vicinity (an approximate 20 m buffer from the visible extent of the site) will be secured to protect the find and the find will be reported to the work supervisor who will immediately advise the environmental manager or other nominated senior staff member;
- an archaeologist and members of the RAPs must be contacted to validate the find and determine the significance of the objects(s); and
- any new sites must be registered in the AHIMS database.

ii Management of new Aboriginal sites

Newly identified sites that are not at risk of impact (ie over 50 m from the approved development footprint) will be avoided through passive protection. Sites that are within 50 m of the approved development footprint will be managed through active protection measures including fencing and signage as outlined in Section 9.2.2.

In the event that newly identified sites will be impacted by the construction of the project and cannot be avoided, they will be managed in a manner commensurate with their assessed significance, consistent with the management measures provided for similar sites in this chapter, meaning:

- Stone artefact sites of low or moderate significance may be collected prior to ground disturbance or be subject to unmitigated impacts, based on the outcomes of consultation with the RAPs.
- Decisions about stone artefact sites of high significance will require further consultation with the RAPs and OEH to determine an appropriate salvage methodology.
- Although other Aboriginal site types are unlikely to occur in the development footprint (eg grinding stones or stone arrangements), the following steps will be followed if they are identified:
    - a suitably qualified archaeologist will be contacted to verify and assess the evidence;
    - if the find is not an Aboriginal object then the works can continue without further investigation; and
    - if the find is verified as being an Aboriginal object, the RAPs and OEH will be contacted to discuss appropriate management measures proportionate to the significance of the find.

9.3.3 Management summary

Table 9.1 provides a summary of Aboriginal sites, significance ratings, impact types and management measures.

Table 9.1 Management recommendations

Site name	Site type	AHIMS number	Significance rating	Impact type	Level of impact	Consequence of impact	Management recommendations
OG_ISF1	Isolated artefact	20-4-0819	Low	None	None	None	Avoid (passive)
OG_ISF2	Isolated artefact	20-4-0818	Low	Project construction	Total disturbance	Total loss of value	Unmitigated impact
OG_PST1	Possible scar tree	20-4-0817	Moderate	None	None	None	Avoid (passive)
OG_PST2	Possible scar tree	20-4-0820	Moderate	None	None	None	Active management: demarcate and avoid

References

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Appendix A

Aboriginal consultation documentation

Aboriginal Consultation Log: Orange Grove Sun Farm Consultation log	Contact type	Date	Comment
Stage 1 - Advisory Requests Sent			
Organisation	**Contact type**	**Date Sent**	**Comment**
Office of Environment and Heritage North West Region	Letter	10-Oct-17	Response received 27.10.2017
the Registrar, Aboriginal Land Rights Act 1983	Letter	10-Oct-17	Response received 19.10.2017
National Native Title Tribunal	Letter	10-Oct-17	Response received 16.10.2017
Native Title Services Corporation (NTSCORP)	Letter	10-Oct-17	Documentation was forwarded onto Gomeroi People NC2011/006 on 24.11.2017 (based on call from NTSCORP on 24.11.2017)
North West Local Land Services (Catchment Management Authority)	Letter	10-Oct-17	No response
Gunnedah Shire Council	Letter	10-Oct-17	Response received 18.10.2017
Red Chief Local Aboriginal Land Council	Letter	10-Oct-17	Response received 16.10.2017
Newspaper Ad Namoi Valley Independent	Media advertisement	12-Oct-17	
Aboriginal Group Notifications Sent			
Organisation	**Contact type**	**Date**	**Comments**
Alison Sampson	Express Post	31-Oct-17	
AT Gomilaroi Cultural Consultancy	Express Post	31-Oct-17	
Bigundi Biame Gunnedarr Traditional People	Express Post	31-Oct-17	
BJC Cultural Management	Express Post	31-Oct-17	
Breeza Plains Cultural Heritage Consultants	Express Post	31-Oct-17	
Brent Mathews	Express Post	31-Oct-17	
Brian Draper	Express Post	31-Oct-17	
Bunda Consultants	Express Post	31-Oct-17	
Buritja Aboriginal Corporation Breeza	Express Post	31-Oct-17	
Cacatua General Service (Cacatua Culture Consultants)	Express Post	31-Oct-17	
Cheryl Moodie Consultants	Express Post	31-Oct-17	
Christine Archbold	Express Post	31-Oct-17	
Clifford Matthews	Express Post	31-Oct-17	
Cindy Foley	Express Post	31-Oct-17	
D F TV Enterprises	Express Post	31-Oct-17	
Darrell Mathews	Express Post	31-Oct-17	
Deslee Mathews	Express Post	31-Oct-17	
Donna Moodie	Express Post	31-Oct-17	
Elli Lewis	Express Post	31-Oct-17	
Esther Tighe	Express Post	31-Oct-17	
George Sampson (C/- Cucatua Culture Consultants)	Express Post	31-Oct-17	
Glenn Edward Johnson	Express Post	31-Oct-17	
Gomeroi Murri Ganuurr Yuuray Wadi Palinka	Express Post	31-Oct-17	
Gomeroi People NC2011/006 (via NTSCORP)	Express Post	31-Oct-17	
Gomery Cultural Consultants	Express Post	31-Oct-17	
Gunida Gunyah	Express Post	31-Oct-17	
Gunjeewong Cultural Heritage Aboriginal Corporation	Express Post	31-Oct-17	
Hazel Collins	Express Post	31-Oct-17	
HECMO Consultants	Express Post	31-Oct-17	
Heilamon Cultural Consultants	Express Post	31-Oct-17	
Jeff Matthews	Express Post	31-Oct-17	
Jodie Mckinnon	Express Post	31-Oct-17	
John Matthews	Express Post	31-Oct-17	
Joshua Matthews	Express Post	31-Oct-17	
Justin Matthews	Express Post	31-Oct-17	
Katrina Mckinnon	Express Post	31-Oct-17	
Kawul Cultural Services	Express Post	31-Oct-17	
Kevin Sampson	Express Post	31-Oct-17	
KL.KG Saunders Trading Service	Express Post	31-Oct-17	
Lloyd Matthews	Express Post	31-Oct-17	
Lorraine Towney	Express Post	31-Oct-17	
Luke Cameron Cultural Management	Express Post	31-Oct-17	
Mavonia Welsh	Express Post	31-Oct-17	
ME Griffiths Cultural Management	Express Post	31-Oct-17	
Michael Long	Express Post	31-Oct-17	
Michelle Saunders	Express Post	31-Oct-17	
Min Min Aboriginal Corporation	Express Post	31-Oct-17	
Mooki Plains Management	Express Post	31-Oct-17	
Mooki River Consultants	Express Post	31-Oct-17	
Murra Bidgee Aboriginal Corporation, Cultural Heritage	Express Post	31-Oct-17	
Muswellbrook Cultural Consultants	Express Post	31-Oct-17	
Namoi Catchment Management Authority	Express Post	31-Oct-17	
Natasha Rodgers	Express Post	31-Oct-17	
Ngoorabul Elders	Express Post	31-Oct-17	
Paul Moodie	Express Post	31-Oct-17	
Peter Watton	Express Post	31-Oct-17	
Red Chief Local Aboriginal Land Council	Express Post	31-Oct-17	
Richard Slater	Express Post	31-Oct-17	
Rick Slater	Express Post	31-Oct-17	
Robert Miller	Express Post	31-Oct-17	
Rodney Mathews	Express Post	31-Oct-17	
Roger Mathews	Express Post	31-Oct-17	
Ron Smith	Express Post	31-Oct-17	
Rona Slater	Express Post	31-Oct-17	
Ronald Long	Express Post	31-Oct-17	
Roslyn Smith	Express Post	31-Oct-17	
Scott Smith	Express Post	31-Oct-17	
Sonny Fitzroy	Express Post	31-Oct-17	
T&G Culture Consultants	Express Post	31-Oct-17	
Tania Mathews	Express Post	31-Oct-17	
Tracy Woltley	Express Post	31-Oct-17	
Troy Silver	Express Post	31-Oct-17	
Wattaka Cultural Consultancy Service	Express Post	31-Oct-17	
AGA Services	Express Post	31-Oct-17	

Aboriginal Group Registrations & Communications

Organisation	Contact type	Date	Comments
AT Gomilaroi Cultural Consultancy	email	16-Oct-17	
Cacatua General Service (Cacatua Culture Consultants)	email	04-Nov-17	
Gomeroi People NC2011/006 (via Steve Talbott)	Telephone	29-Nov-17	
Gunjeewong Cultural Heritage Aboriginal Corporation	email and letter	11-Nov-17	
Katrina Mckinnon	email	08-Nov-17	
Murra Bidgee Aboriginal Corporation, Cultural Heritage	email	13-Nov-17	
Natasha Rodgers	email	14-Nov-17	
Red Chief Local Aboriginal Land Council	email	16-Oct-17	
Ronald Long	email	07-Nov-17	
AGA Services	email	04-Nov-17	
Shirley May Talbott	Telephone	07-Nov-17	

OEH & LALC notified of Registered Stakeholders

Organisation	Contact type	Date	Comments
OEH	**Express Post**	**08-Dec-17**	**KA - T:\Jobs\2017\J17210 - Orange Grove Sun Farm\Technical studies\Heritage\Aboriginal heritage\Aboriginal consultation\Stage 1 - Notification & Reg\Agency Notification 4.1.6**
Red Chief Local Aboriginal Land Council	**Express Post**	**08-Dec-17**	**KA - T:\Jobs\2017\J17210 - Orange Grove Sun Farm\Technical studies\Heritage\Aboriginal heritage\Aboriginal consultation\Stage 1 - Notification & Reg\Agency Notification 4.1.6**

Stage 2 - Project Presentation & Methodology Advice Sent

Organisation	Contact type	Date Sent	Comments
AT Gomilaroi Cultural Consultancy	email	31-Oct-17	
Cacatua General Service (Cacatua Culture Consultants)	email	31-Oct-17	
Gomeroi People NC2011/006	email	31-Oct-17	This letter was sent to NTSCORP prior to Gomeroi People's registration almost a month later on 29-11-2017. EMM sent this to the Gomeroi People because they assumed they would be interested in the project.
Gunjeewong Cultural Heritage Aboriginal Corporation	email	31-Oct-17	
Katrina Mckinnon	email	31-Oct-17	
Murra Bidgee Aboriginal Corporation, Cultural Heritage	email	31-Oct-17	
Natasha Rodgers	email	31-Oct-17	
Red Chief Local Aboriginal Land Council	email	31-Oct-17	
Ronald Long	email	31-Oct-17	
AGA Services	email	31-Oct-17	
Shirley May Talbott	email	31-Oct-17	

Stage 4 - Issue of draft reports to RAPs

Organisation	Contact type	Date Sent	Comments: Deadline 9 March
AT Gomilaroi Cultural Consultancy	email	08-Feb-18	
Cacatua General Service (Cacatua Culture Consultants)	email	08-Feb-18	
Gomeroi People NC2011/006	email	08-Feb-18	
Gunjeewong Cultural Heritage Aboriginal Corporation	email	08-Feb-18	
Katrina Mckinnon	email	08-Feb-18	
Murra Bidgee Aboriginal Corporation, Cultural Heritage	email	08-Feb-18	
Natasha Rodgers	email	08-Feb-18	
Red Chief Local Aboriginal Land Council	email	08-Feb-18	
Ronald Long	email	08-Feb-18	
AGA Services	email	08-Feb-18	
Shirley May Talbott	email	08-Feb-18	

Communications Record					
Date	**RAP**	**RAP Person**	**EMM person**	**Topic**	**Details**
31/10/201	NTSCORP	George Tonna	Ryan Desic	Registrations	Ryan had previously consulted with George Tonna from NTSCORP and the outcome was that EMM would send all correspondence for the Gomeroi Native Title Claimants via George Tonna because no direct contact details were provided. As such, EMM sent the letter of invite and methodology to the Gomeroi People via George Tonna.
15/11/2017	Yvonne Rodgers and Aunties	Natasha Rodgers and	Ryan Desic	Fieldwork	Nastasha Rodgers and Aunties called about the upcoming fieldwork and wished to know who would be involved.
24/11/2017	Steve Talbott	Steve Talbott	Ryan Desic	Registrations	Steve called regarding the Orange Grove Sun Farm Project. He informed me that he was a knowledge holder and knew of Elders who hold cultural knowledge about the local area. Acknowleding this, Ryan offered to register Steve for the project. Steve informed me that he would send through his email address for contact.
28/11/2017	Steve Talbott (on behalf of Gomeroi People Native title claimants)	Steve Talbott	Ryan Desic	Registrations and cultural knowledge	Steve called and informed Ryan that he had just received the project letter for invite and assessment methodology (addressed to the Gomeroi People native title claimants). Ryan explained that it was unfortunate because the letter was sent almost a month ago (31/10/2017). Steve expressed his concern about the project proceeding without the appropriate people being consulted firstly. Ryan explained that fieldwork was already planned for the next day (29/11/2017) which Steve also expressed his concern about as his party would have liked to have been involved. Ryan explained that he would discuss options with the proponent to make sure the Gomeroi People are given the appropriate opportunity to be involved with the project.
1/12/2017	Aaron and Steve Talbott		Ryan Desic	ACHA	At the request of Aaron Talbott and Steve Talbott on separate occasions to visit the project area, they were offered the opportunity to be shown the project area on 7/12/2017. Sten Fraser (the proponent representative) offered to escort Aaron and Steve on the site and field and questions.
6/12/2017	Yvonne Rodgers and Aunties	Yvonne Rodgers	Ryan Desic	ACHA	Yvonne expressed concern that Aaron and Steve Talbott would be undertaking additional archaeological survey work. Ryan explained to Yvonne that the nature of the site visit was to allow Aaron and Steve to familairse themselves with the project area.
7/12/2017	Aaron and Steve Talbott		Ryan Desic	Site visit	Sten Fraser escorted Aaron Talbott on site. Steve intended attend however was not present on the day. Sten Fraser escorted Aaron across the site showing different project options.

10 October 2017

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
PO Box 21
St Leonards, NSW, 1590

T +61 2 9493 9500
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E info@emmconsulting.com.au

www.emmconsulting.com.au

Office of Environment and Heritage North West Region
PO Box 2111
Dubbo NSW 2830

Re: Gunnedah Sun Farm: request for identification of Aboriginal parties for consultation

Dear Michelle Howarth

EMM Consulting Pty Limited (EMM), on behalf of **Gunnedah Sun Farm Pty Ltd**, is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the proposed Gunnedah Sun Farm (the project). The project is a large-scale solar photovoltaic generation facility and associated infrastructure near the township of Gunnedah, in the Brigalow Belt South bioregion of northern NSW (Figure 1).

In accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010), EMM requests information about relevant Aboriginal persons and Aboriginal organisations who you consider may have cultural knowledge relevant to the local area.

I would be appreciative of your response by 24 October 2017 to the following:

Gunnedah Sun Farm

c/o EMM Consulting Pty Limited

ATN: Ryan Desic

PO Box 21

St Leonards NSW 1590

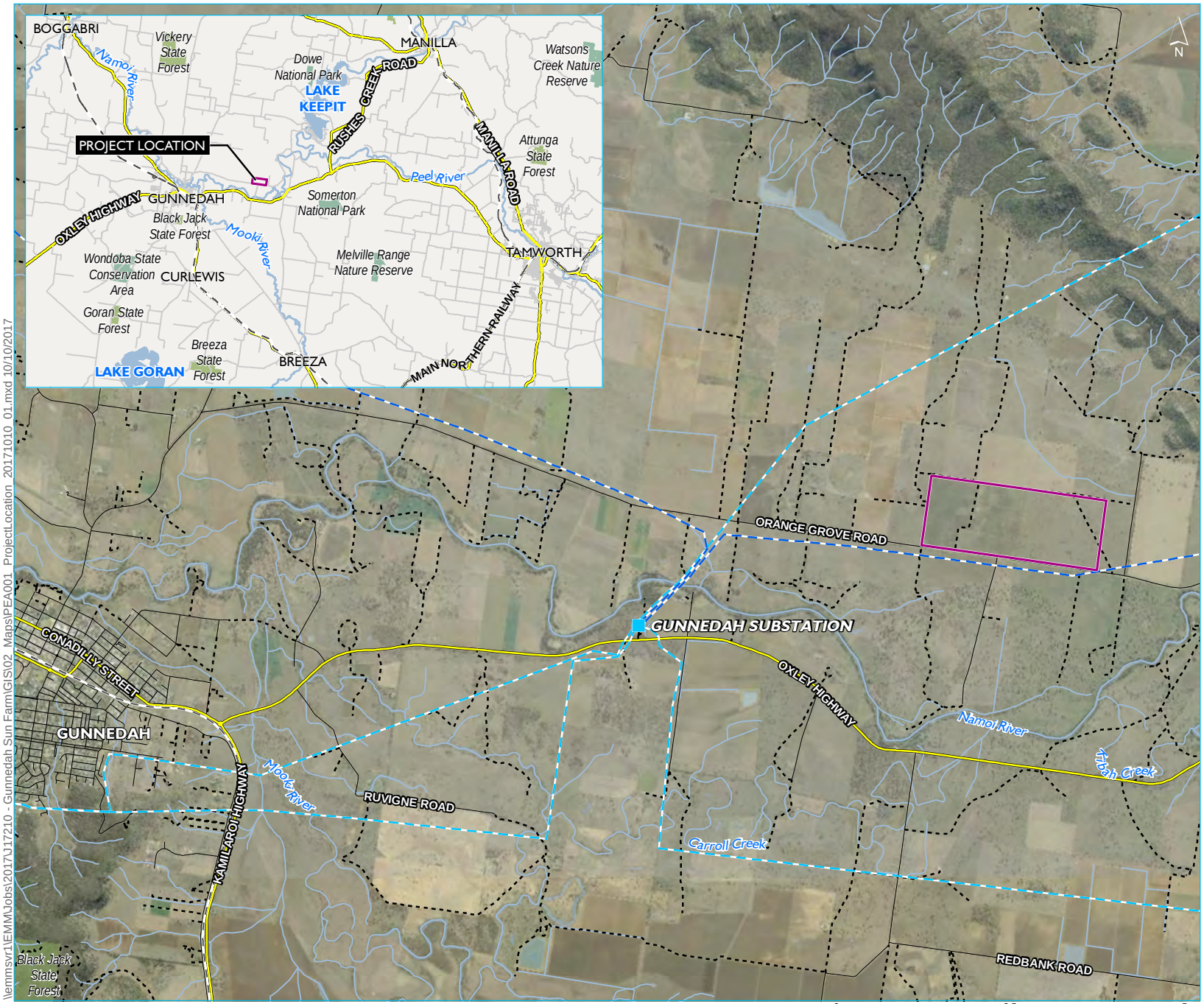
Ph: (02) 9493 9541

Email: rdesic@emmconsulting.com.au

Please advise us at your earliest convenience if additional time is required to provide this information. Information received after 24 October 2017 might not be considered in the consultation process due to the assessment timeframe.

Yours sincerely,

Ryan Desic
Senior Archaeologist
rdesic@emmconsulting.com.au
Ph: 9493 9541



\\emmsvr1\EMM\Jobs\2017\J17210 - Gunnedah Sun Farm\GIS\02 Maps\PEA001 ProjectLocation 20171010 01.mxd 10/10/2017

Source: EMM (2017); DFSI (2017); LPI (2015)

Project location

Gunnedah Sun Farm
Figure 1

EMM

Notice of Aboriginal Consultation

Project name: Gunnedah Sun Farm

Proponent: Gunnedah Sun Farm Pty Ltd on behalf of OVERLAND Sun Farming Pty Ltd

Location: DP 945590 (Lot 2), DP 754928 (Lot 27) and DP 1068520 (Lot 2), approximately 12 km east of Gunnedah, NSW.

The proponent proposes to develop the Gunnedah Sun Farm, a large-scale solar photovoltaic generation facility and associated infrastructure.

Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and / or Aboriginal places in the area of the proposed project are invited to register an interest to consult with the proponent on the topic of Aboriginal cultural heritage and the proposed activity.

The purpose of community consultation with Aboriginal people is to assist the proposed applicant in: 1) assessing the Aboriginal heritage values of the area, 2) preparing an environmental impact statement under Part 4, Division 4.1 of the NSW Environmental Planning and Assessment Act 1979, preparing application's for Aboriginal heritage impact permits (should they be required) and 3) to assist regulators in the assessment of Aboriginal heritage reports prepared for this project.

Registrations of interest must be submitted in writing on or before 25th October. Registrations should include the name of a contact person, address and other relevant contact details, preferably including an email address. The names of registered Aboriginal parties will be passed on to the relevant Local Aboriginal Land Council and the Office of Environment and Heritage unless a request to the contrary is made.

Send registrations of interest to:

Gunnedah Sun Farm
C/o EMM Consulting Pty Limited
PO Box 21, St Leonards, NSW, 1590
Fax: 02 9493 9599
Email: rdesic@emmconsulting.com.au

Registration of interest does not guarantee paid involvement.

NSW GOVERNMENT | Office of Environment & Heritage

DOC17/553418-1

Ryan Desic
Senior Archaeologist
EMM Consulting
PO Box 21
St Leonards NSW 1590

Dear Ryan

WRITTEN NOTIFICATION AS REQUIRED UNDER OFFICE OF ENVIRONMENT AND HERITAGE (OEH) ABORIGINAL CULTURAL HERITAGE REQUIREMENT FOR PROPONENTS 2010 – FOR PROPOSED ORANGE GROVE SUN FARM NEAR GUNNEDAH NSW

I refer to your letter dated 1 October 2017 to the Office of Environment and Heritage (OEH) regarding the above matter.

A list of known Aboriginal parties that OEH considers is likely to have an interest in this development is attached as Attachment 1 (overleaf). Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties and receipt of this list does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the requirements of Section 80C of the National Parks and Wildlife Regulation 2009.

Should you require further information regarding issues that are the responsibility of the OEH please contact Paul Houston, Aboriginal Heritage Planning Officer on (02) 6883 5361.

Yours sincerely

Samantha Wyn 30/10/2017

SAMANTHA WYNN
Senior Team Leader Planning North West
Regional Operations Group

Contact officer: Paul Houston
02 6883 5361

NSW GOVERNMENT | Office of Environment & Heritage

ATTACHMENT 1

OEH'S LIST OF ABORIGINAL STAKEHOLDER GROUPS WITHIN THE GUNNEDAH LGA'- THAT MAY HAVE AN INTEREST IN THE PROJECT; PROVIDED AS PER THE "OEH ABORIGINAL CULTURAL HERITAGE REQUIREMENT FOR PROPONENTS 2010".

Company / Person	Contact	Address
Alison Sampson		36 Hill Street, Caroona NSW 2343
AT Gomilaroi Cultural Consultancy	Aaron Talbott	2/154 Little Barber Street, Gunnedah NSW 2380
Bigundi Biame Gunnedarr Traditional People	CEO	16 South Street, Gunnedah NSW 2380
BJC Cultural Management	Ben Cameron	11 Stanley Street, Gunnedah NSW 2380
Breeza Plains Cultural Heritage Consultants		16 Price Street, Quirindi NSW 2343
Brent Mathews		21 Bando Street , Gunnedah NSW 2380
Brian Draper		7 Sovereign St, Dubbo NSW 2830
Bunda Consultants	Tammy Knox 0402688031	23 Cunningham Street, Tamworth NSW 2380
Buritja Aboriginal Corporation Breeza	Judith Hartley	PO Box 412, Gunnedah NSW 2380
Cacatua General Service (Cacatua Culture Consultants)	Donna	Main Office: 260 Hidden Valley ROW, Wybong NSW 2333 2nd location: 22 Ibis Parade, Woodberry NSW 2322 3rd Location: 49 Herbert Street, Gunnedah NSW 2380
Cheryl Moodie Consultants		11 Coolibah Close, Muswellbrrok NSW 2333
Christine Archbold		40 Humphies St, Muswellbrook NSW 2333
Clifford Matthews		16/A Mahogany Ave, Muswellbrook NSW 2333
Cindy Foley		33 Jaegar Avenue Gunnedah 2380
D F T V Enterprises	Derrick Vale	5 Mountbatten Close, Rutherford NSW 2320
Darrell Mathews		14 Edinglassie Drive, Muswelllbrook NSW 2333
Deslee Mathews		Unit 2/19 South Street, Gunnedah NSW2380
Donna Moodie		PO Box 356, Darling Heights QLD 4350
Elli Lewis	Patrica Jean Hands	20 Acacia Circuit, Singleton NSW 2330
Esther Tighe		1/86 Edward Street, Gunnedah NSW 2380
George Sampson (C/- Cucatua Culture Consultants)		49 Ibis Parade, Woodberry NSW 2322
Glenn Edward Johnson		Glenn.johnston@nt.gov.au
Gomeroi Murri Ganuurr Yuuray Wadi Palinka	Greg Griffith	4 Wattle Street, Gunnedah NSW 2380
Gomery Cultural Consultants		12 Okeefe Place, Gunnedah NSW 2380
Gunida Gunyah	CEO	PO Box 439, Gunnedah NSW 2380

NSW GOVERNMENT | Office of Environment & Heritage

Gunjeewong Cultural Heritage Aboriginal Corporation	Chairperson	1 Bellevue Place, Portland NSW 2847
Hazel Collins		3 Carroll Street, Gunnedah NSW 2380
HECMO Consultants	Kerren Boyd	Lot 136 Main Street, Breeza NSW 2381
Heilamon Cultural Consultants	Clifford Johnson	77 Tobruk Ave, Musewellbrook NSW 2333
Jeff Matthews		6 Eucalypt Avenue, Muswellbrook NSW 2333
Jodie Mckinnon		100 Stock Road, Gunnedah NSW 2380
John Matthews		16/A Mahogany Avenue, Muswellbrook NSW 2333
Joshua Matthews		21 Bando Street , Gunnedah NSW 2380
Justin Matthews		16/B Mahogany Avenue, Muswellbrook NSW 2333
Katrina Mckinnon		33 Hinton Drive, Gunnedah NSW 2380
Kawul Cultural Services	Vicky Slater	PO Box 817, Singleton NSW 2330
Kevin Sampson		1 Martyn Street, Breeza NSW 2381
KL.KG Saunders Trading Service		6 Bowfield Place, Muswellbrook NSW 2333
LLoyd Matthews		16/A Mahogany Avenue, Muswellbrook NSW 2333
Lorraine Towney		32 Dewhurst Street, Quirindi NSW 2343
Luke Cameron Cultural Management		28 Herbert St, Gunnedah NSW 2380
Mavonia Welsh		1 Yabsley Avenue, Marrickville NSW 2204
ME Griffiths Cultural Management	Marie- Ellen Griffiths	10 herbert Street, Gunnedah NSW 2380
Michael Long		17 Albion Street, Gunnedah NSW 2380
Michelle Saunders		24 Walhallow Village, Walhallow NSW 2340
Min Min Aboriginal Corporation	CEO	Po Box 877, Gunnedah NSW 2380
Mooki Plains Management		28 Herbert Street, Gunnedah NSW 2380
Mooki River Consultants	Wayne Mathews	Lot 5 Martyn Street, Breeza NSW 2381
Murra Bidgee Aboriginal Corporation, Cultural Heritage		PO Box 246, Seven Hills NSW 2147
Muswellbrook Cultural Consultants	Brian Horton	10 Scott Street, Muswellbrook NSW 2333
Namoi Catchment Management Authority	Aboriginal Reference Group	PO Box 546, Gunnedah NSW 2380
Natasha Rodgers		7 Toy Court, Wodonga VIC 3690
Ngoorabul Elders	Chairperson	PO Box 157, Glen Innes NSW 2370
Paul Moodie		15 Schwager Street, Gunnedah NSW 2380
Peter Watton		Flat 3, 67 Marquis Street, Gunnedah NSW 2357
Red Chief LALC	Chairperson	PO Box 745, Gunnedah NSW 2357
Richard Slater		121 Roberts Street, Tamworth NSW 2340

NSW GOVERNMENT | Office of Environment & Heritage

Rick Slater		121 Roberts Street, Tamworth NSW 2340
Robert Miller		34 Baxter Street, Gunnedah NSW 2380
Rodney Mathews		8 Fitzgerald Avenue, Muswellbrook NSW 2333
Roger Mathews		15 Parkinson Avenue, Muswellbrook NSW 2333
Ron Smith		Flat 8, 6 Hasting River Drive, Port Macquarie NSW 2444
Rona Slater		71 Roberts Street, Tamworth NSW 2304
Ronald Long		32 High Street, Gunnedah NSW 2380
Roslyn Smith		Unit 4, 122 Upper Street, Tamworth NSW 2340
Scott Smith		Unit 4, 122 Upper Street, Tamworth NSW 2340
Sonny Fitzroy		17 Albion Street, Gunnedah NSW 2380
T&G Culture Consultants	Tony Griffiths	4 Wattle Street, Gunnedah NSW 2380
Tania Mathews		23 Reid Street, Narrabri NSW 2390
Tracy Woltley		75 High Street, Gunnedah NSW 2380
Troy Silver		57 Hopedale Avenue, Gunnedah NSW,2380
Wattaka Cultural Consultancy Service	Des Hickey	PO Box 749, Tamworth NSW 2340

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

19 October 2017

Ryan Desic
Gunnedah Sun Farm
c/o EMM
Atten: Ryan Desic
PO Box 21
ST LEONARDS NSW 1590

Dear Ryan

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 10 October 2017 regarding an Aboriginal Cultural Heritage Assessment located within the area of Gunnedah, NSW

I have searched the Register of Aboriginal Owners and the project area described does not have Registered Aboriginal Owners pursuant to Division 3 of the Aboriginal Land Rights Act 1983 (ALRA).

I suggest that you contact the Red Chief Local Aboriginal Land Council on 02 6742 3602. They may be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Jodie Rikiti
Administration Officer
Office of the Registrar, ALRA

Ryan Desic

From: Enquiries [Enquiries@nntt.gov.au]
Sent: Monday, 16 October 2017 5:23 PM
To: Ryan Desic
Subject: RE: SR3212 - EMM - Gunnedah Sun Farm - SR3212
Attachments: 20171016_SR3212_NSW_Gunnedah_Shire_Council_LGA_Overlap_Report.xlsx

UNCLASSIFIED

Native title search – *NSW Parcels in Gunnedah Shire Council*
Your ref: *Gunnedah Sun Farm* - **Our ref:**
SR3212

Dear Ryan Desic,

Thank you for your search request received on 16 October 2017 in relation to the above area, please find your results attached.

Please note: Where the area identified to be searched is indistinct, generalised, or is for a freehold parcel, the results provided may relate to the Local Government Area (LGA) or Local Aboriginal Land Council (ALC).

Search Results
The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

- Schedule of Native Title Determination Applications
- Register of Native Title Claims
- Native Title Determinations
- Register of Indigenous Land Use Agreements
- Notified Indigenous Land Use Agreements

For more information about the Tribunal's registers or to search the registers yourself and obtain copies of relevant register extracts, please visit our website.

Please note: There may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed with the Federal Court may not appear on the Tribunal's databases.

The search results are based on analysis against external boundaries of applications only. Native title applications commonly contain exclusions clauses which remove areas from within the external boundary. To determine whether the areas described are in fact subject to claim, you need to refer to the "Area covered by claim" section of the relevant Register Extract or Schedule Extract and any maps attached.

Search results and the existence of native title
Please note that the enclosed information from the Register of Native Title Claims and/or the Schedule of Applications is **not** confirmation of the existence of native title in this area. This cannot be confirmed until the Federal Court makes a determination that native title does or does not exist in relation to the area. Such determinations are registered on the National Native Title Register.

Tribunal accepts no liability for reliance placed on enclosed information
The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representation, either express or implied, as to the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.

If you have any further queries, please do not hesitate to contact me on the number below or on the free call number 1800 640 501.

Regards,

Enquiries
Public enquiry hours are 8.30am to 4.30pm
National Native Title Tribunal | Perth
Facsimile (08) 9425 1193 | Email enquiries@nntt.gov.au
Freecall 1800 640 501 | www.nntt.gov.au
Shared Country Shared Future
Celebrating 25 Years of Native Title Recognition www.nativetitle25.gov.au

National Native Title Tribunal

Overlap Analysis Report

Disclaimer
This information product has been created to assist in understanding the spatial characteristics and relationships of this native title matter and is intended as a guide only. Spatial data used has been sourced from the relevant custodians in each jurisdiction, and/or the Tribunal, and is referenced to the GDA94 datum.

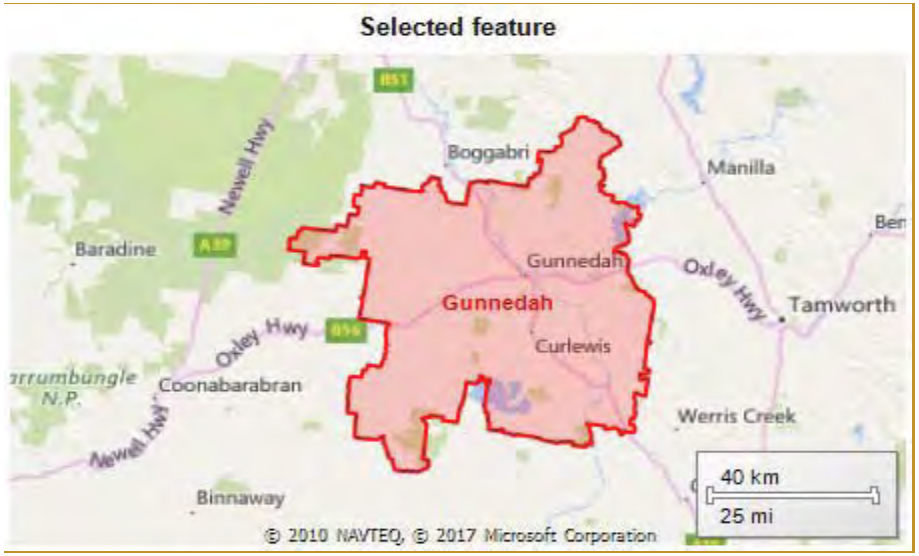
While the Native Title Registrar **(Registrar)** has exercised due care in ensuring the accuracy of the information provided, it is provided for general information only and on the understanding that neither the Native Title Registrar nor the Commonwealth of Australia (Commonwealth) is providing professional advice. Appropriate professional advice relevant to your circumstances should be sought rather than relying on the information provided. In addition, you must exercise your own judgment and carefully evaluate the information provided for accuracy, currency, completeness and relevance for the purpose for which it is to be used.
As the interpretation of any particular native title determination area provided is based upon the best information available to the Registrar at the time of creation, any effective analysis must include reference to **both** the relevant determination of native title made by the Federal Court of Australia and the entry made in relation to that determination on the National Native Title Register maintained by the Registrar.

Please note:

- Calculated areas may not be the same as the legal area of a parcel.
- Where shown, NNTT Tenure Class for a non freehold parcel refers to a tenure grouping derived for the purposes of the Tribunal, and does not necessarily represent the jurisdictional tenure type.
- Overlap results are returned only for the currently active jurisdiction.

Selected feature

Name	Gunnedah
Full name	Gunnedah Shire Council
As at	1/08/2017
Calculated area SqKm	4,996.2753



Overlap details

Schedule of Native Title Determination Applications

Overlap Tribunal ID	Name	FC No	Date Lodged	RT Status	Area sq km(calculated)	Overlap Area sq km (calculated)
NC2011/006	Gomeroi People	NSD2308/2011	20/12/2011	Accepted for registration	111,313.4885	4,996.2753

Register of Native Title Claims

Overlap Tribunal ID	Name	FC No	Date Lodged	RT Status	Combined	Area sq km(calculated)	Overlap Area sq km (calculated)
NC2011/006	Gomeroi People	NSD2308/2011	20/12/2011	Accepted for registration	N	111,313.4885	4,996.2753

Native Title Determinations

No overlap found

Native Title Determination Outcomes

No overlap found

Indigenous Land Use Agreements

No overlap found

RATSIB areas

Name	Organisation	RATSIB Status	Area sq km(calculated)	Overlap Area sq km (calculated)
New South Wales	NTSCORP Limited	NTSP	1,723,577.6107	4,996.2753

Ryan Desic

From: Hunt - Carolyn [carolynhunt@infogunnedah.com.au]
Sent: Wednesday, 18 October 2017 3:08 PM
To: Ryan Desic
Subject: RE: Gunnedah Sun Farm Location

Hi Ryan,
Thank you for the property details.
In response to your correspondence regarding relevant Aboriginal persons and Aboriginal organisations, the following information is provided:

- Red Chief Local Aboriginal Lands Council – PO Box 745 Gunnedah NSW 2380 (ceo@redchieflalc.com.au)

Regards,
Carolyn

Carolyn Hunt | Manager Development & Planning
Gunnedah Shire Council (63 Elgin Street) | PO Box 63, Gunnedah NSW 2380
t 02 6740 2122| **f** 02 6740 2129 | **e** carolynhunt@infogunnedah.com.au

Find us at: www.infogunnedah.com.au **or** www.facebook.com/gunnedahshire

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From: Ryan Desic [mailto:rdesic@emmconsulting.com.au]
Sent: Wednesday, 18 October 2017 2:56 PM
To: Hunt - Carolyn
Subject: Gunnedah Sun Farm Location

Hi Carolyn,

Sorry for the omission of the location! A description is provided here:

The site is within the Gunnedah Shire local government area (LGA), approximately 12 kilometres (km) east of the township of Gunnedah. The site encompasses an area of approximately 256 hectares (ha) and is adjacent to Orange Grove Road. The land is legally described as DP 945590 (Lot 2), DP 754928 (Lot 27) and DP 1068520 (Lot 2).

To my knowledge the site is zoned RU1 Primary Production under the Gunnedah Local Environmental Plan 2012 (but you would need to check).

Regards,

Ryan Desic | Senior Archaeologist

T 02 9493 9500 | **D** 02 9493 9541 | **M** 0411 329 712 | **F** 02 9493 9599

Ground Floor, Suite 01, 20 Chandos Street, St Leonards NSW 2065

PO Box 21, St Leonards NSW 1590

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F +61 2 9493 9599
E info@emmconsulting.com.au

www.emmconsulting.com.au

31 October 2017

Glenn Edward Johnson
Glenn.johnston@nt.gov.au

Re: Orange Grove Sun Farm: Invitation to register for Aboriginal consultation

Dear Glenn,

1 Invitation to register

OVERLAND Sun Farming Pty Ltd (OVERLAND) on behalf of **Orange Grove Sun Farm Pty Ltd** proposes to develop the Orange Grove Sun Farm, a large-scale solar photovoltaic generation facility and associated infrastructure near the township of Gunnedah, in the Brigalow Belt South bioregion of northern NSW (the project) (Figure 1).

The site is within the Gunnedah Shire local government area (LGA), approximately 12 kilometres (km) east of the township of Gunnedah. The site encompasses an area of approximately 256 hectares (ha) and is adjacent to Orange Grove Road (Figure 1). The land is legally described as DP 945590 (Lots 1 and 2), DP 754928 (Lot 27) and DP 1068520 (Lot 2).

The project is a State significant development (SSD) under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). Therefore, a development application (DA) for the project is required to be submitted under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Minister for Planning, or the Minister's delegate, is the consent authority. Consultation will also encompass future Aboriginal Heritage Impact Permit (AHIP) applications for the project issued under s.90 of the NSW *National Parks and Wildlife Act 1974* (if applicable).

EMM Consulting Pty Limited (EMM), on behalf of Orange Grove Sun Farm Pty Ltd and OVERLAND, is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the proposed solar farm.

Your organisation has been identified as having potential interest in registering for consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010).

If you wish to register your interest as an Aboriginal party your registration must be in writing (letter, fax or email), and include:

- your name/organisation; and
- current contact details (postal address, email, phone number/s).

EMM is seeking to engage all future correspondence with registered Aboriginal Parties (RAPs) via email. This method is considered the most reliable, cost-effective, and timely manner of consultation. As such, EMM requests your agreement to undertake the consultation via email as the official method of contact.

We request that you provide your email address to rdesic@emmconsulting.com.au.

Registrations must be received by Ryan Desic (see contact details below) by close of business on 14 November 2017.

As required by the Office of Environment and Heritage (OEH) guidelines, details of people registering as Aboriginal Parties will be forwarded to OEH and the relevant Local Aboriginal Land Council unless you specify otherwise.

Registration of interest does not guarantee employment.

Please send correspondence to:

Orange Grove Sun Farm
C/O Ryan Desic
EMM Consulting
PO Box 21
St Leonards NSW 1590
Phone: 02 9493 9541
Fax: 02 9493 9599
Email: rdesic@emmconsulting.com.au.

2 What's next?

This letter also includes the following attachments for your review:

- **Attachment A** contains a presentation of the method for the Aboriginal heritage investigation of the project for review and comment. We welcome feedback before 28 November 2017.
- **Attachment B** contains information on how to apply for fieldwork for this project, as noted above fieldwork is anticipated to be limited in scope and not all registered parties may be able to participate. Applications close on 17 November 2017.

3 Any questions?

Please feel free to contact me with any questions or queries about the project via email (provided below) or telephone on the numbers below.

Yours sincerely,

Ryan Desic
Senior Archaeologist
rdesic@emmconsulting.com.au
02 9493 941
0411 329 712

Attachment A Aboriginal Cultural Heritage Assessment Method

1 Introduction

Thank you for registering your interest in being consulted on Aboriginal cultural heritage matters for the Orange Grove Sun Farm (the project). EMM Consulting Pty Ltd (EMM), on behalf of Orange Grove Sun Farm Pty Ltd and OVERLAND Sun Farming Pty Ltd (OVERLAND), is preparing an Aboriginal cultural heritage assessment (ACHA) for the project.

The aims of this letter are to:

- provide a brief description of the project and approval pathways;
- establish the purpose and aims of the Aboriginal consultation process;
- provide your party with an opportunity to inform EMM about any Aboriginal cultural heritage values associated with the project;
- present a draft of the intended ACHA methods for your review and comment; and
- notify your party of upcoming fieldwork.

2 The project

2.1 Project description

The project will be developed on a site within the Gunnedah Shire local government area (LGA), approximately 12 kilometres (km) east of the township of Gunnedah (Figure 1). The site encompasses an area of approximately 256 hectares (ha) and is adjacent to Orange Grove Road (Figure 1). The land is legally described as DP 945590 (Lots 1 and 2), DP 754928 (Lot 27) and DP 1068520 (Lot 2).

The project includes the development, construction and operation of a solar PV electricity generation facility, which comprises the installation of PV solar panels and associated infrastructure on the site.

Ultimately, the installed capacity will depend on the development footprint (determined during preparation of the environmental impact statement (EIS)), the available grid capacity, the economics of scale and grid connection, and energy market demand.

As an indication of scale, based on current technologies, the estimated total installed capacity will be in the order of up to 110 MW, which would be generated by approximately 330,000 PV solar panels.

The project will connect to the TransGrid 132 kV electricity distribution network that originates at TransGrid's Gunnedah Substation. The electricity and associated environmental products that are generated from the project will be sold to one or more of a registered energy retailing organisation, large energy user (governmental or private) or to the National Electricity Market that is managed by the Australian Energy Market Operator.

1.1 Project components

The project comprises a number of key components on the site, including:

- a network of PV solar panel arrays;
- electrical collection systems, switchyard and control room;

- energy storage and network support devices
- a management hub, including demountable offices and amenities and equipment sheds;
- parking and internal access roads; and
- easement and connection infrastructure to the Gunnedah Substation.

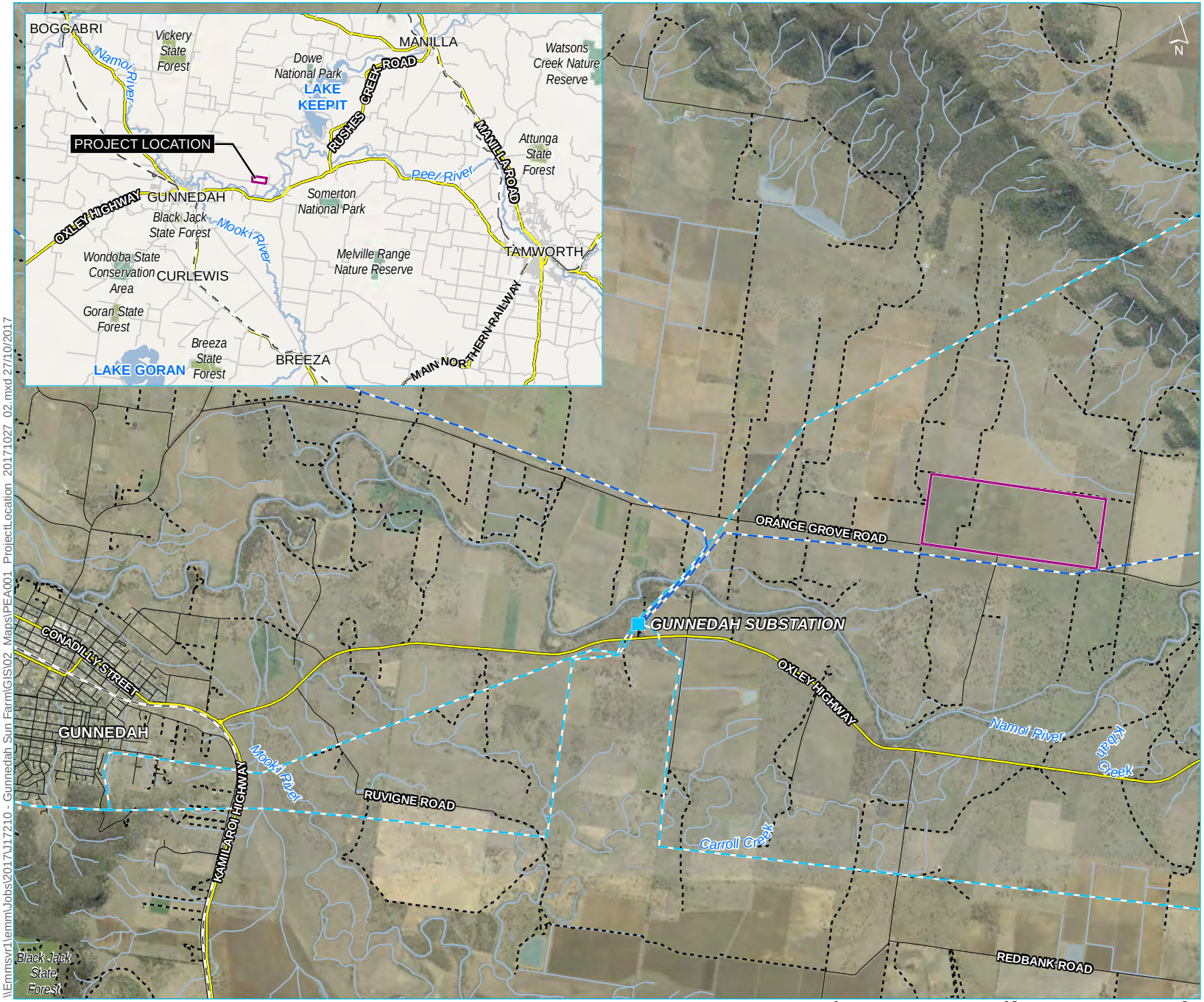
The project may include the installation of battery and energy storage devices within the development footprint. The rated capacity of the proposed battery and energy storage devices will be determined during the detailed design stage of the project and will be dependent on commercial considerations at the time of construction. The proposed battery and energy storage devices will be housed in a secure compound within the development footprint.

The site boundary presented in Figure 1 is a broad footprint which has been identified during initial design and planning stages. During the preparation of the EIS, the development footprint within the site boundary will be refined on the basis of grid connection studies, environmental constraints identification and further engineering assessment and design of project infrastructure.

2.2 Legislative context

The project is a State significant development (SSD) under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). Therefore, a development application (DA) for the project is required to be submitted under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Minister for Planning, or the Minister's delegate, is the consent authority.

The abovementioned assessment pathway means that an Aboriginal heritage impact permit (AHIP) is not required for the project during the environmental assessment or for development consent. Instead, if the project is approved, any Aboriginal objects and/or places affected by the project would be managed under an Aboriginal Cultural Heritage Management Plan (ACHMP), following endorsement by the Department of Planning and Environment (DPE).



\\Emmsvr1\emm\Jobs\2017\J17210 - Gunnedah Sun Farm\GIS\02 Maps\PEA001 ProjectLocation 20171027 02.mxd 27/10/2017

Source: EMM (2017); DFSI (2017); LPI (2015)

Project location

Orange Grove Sun Farm

Figure 1

EMM

3 Draft assessment method

3.1 Assessment methods

The assessment will be undertaken in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the project. Although no SEARs have been issued yet, the assessment will be guided by the following best practice guidelines:

- *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW 2011);
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010); and
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a).

The purpose of the assessment is to identify the Aboriginal heritage values of all areas that will be affected by the project. Aboriginal heritage values will be identified from the following methods:

- consultation with registered Aboriginal parties to identify social values of the study area and places of special significance that should be considered;
- a search of the Aboriginal Heritage Information Management System (AHIMS - Aboriginal sites register) for records of previously registered Aboriginal sites (a completed search has not identified any previously recorded sites within the study area);
- a review of past Aboriginal heritage reports covering the study area, if any are available;
- a review of environmental characteristics to develop a landscape map of possible archaeological site location; and
- an archaeological inspection or survey with Aboriginal stakeholders focusing on landform transects in the project area.

3.2 Aboriginal consultation

3.2.1 Overview of consultation

The roles, functions and responsibilities of all parties involved in the consultation process are outlined in Table 3.1**.** In accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), each private Aboriginal organisation or individual who responded with a written request to be registered for consultation is referred to as a registered Aboriginal party (RAP). Government agencies who registered interest will also be consulted in parallel with RAPs.

Table 3.1 Roles, functions and responsibilities

Stakeholder	Roles and responsibilities
RAPs	Provide cultural perspectives, views, knowledge and advice to EMM. Indicate areas of cultural significance. Provide Aboriginal site officers for archaeological fieldwork. Have an awareness and understanding of the commercial environment and constraints in which the proponent operates.. Demonstrate awareness and understanding of the opportunities to input into the ACHA and management recommendations.

Table 3.1 Roles, functions and responsibilities

Stakeholder	Roles and responsibilities
EMM (on behalf of Orange Grove Sun Farm Pty Ltd)	Undertake the ACHA, including coordinating and directing the fieldwork. Facilitate the Aboriginal consultation process. Consider the cultural perspectives, views, knowledge and advice of the RAPs in assessing cultural significance and developing management measures.
All stakeholders	Mutual respect (each person has the right to have a say and be heard) Communicate with professional code of conduct.

3.2.2 Providing cultural information

Aboriginal heritage incorporates a wide range of values such as stories, traditions and cultural practices. EMM welcomes any advice from the Aboriginal community about any form of Aboriginal cultural heritage values (which might include archaeological sites or other types of values) relevant to the project area and its surrounds.

Knowledge of areas of cultural significance may include, but are not limited to:

- sites or places associated with ceremonies, spiritual/mythological beliefs and traditional knowledge, which date from pre-contact period; these activities do not have to have persisted until the present time;
- sites or places associated with historical associations, which date from the post-contact period and are remembered today (eg plant and animal resource use areas and known camp sites); and
- sites or places of contemporary significance, for which the significance has been acquired in recent times.

EMM is seeking cultural information about the project area from registered RAPs in accordance with Section 4.3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010). If you are aware of any form of Aboriginal cultural heritage values (which might include archaeological sites or other types of values), please let us know so that we can take these values into account in the assessment (refer to Section 4.1).

3.3 Preliminary desktop assessment

3.3.1 Overview

The following information is provided so that your party is familiar with the site and to allow areas of potential cultural importance to be identified during the early stages so that it can be considered for the upcoming fieldwork.

3.3.2 Landscape overview

The site is within the Brigalow Belt South Bioregion. Locally, the site is on an extensive, broad and flat alluvial plain landform pattern within the catchment of the Namoi River, which, at its closest point, is approximately 1.3 km east of the site and dominates the drainage of the local area. The site is part of the Burburgate Soil Landscape which has unique drainage features; drainage is generally by sheet flow with few, very widely spaced incised channels.

3.3.3 Archaeological context

A search of the AHIMS register identified eight Aboriginal sites within a 20 km x 20 km area centred on the site. No Aboriginal sites have been registered within the site boundary or along the easement options currently being considered. The closest Aboriginal site is an artefact scatter almost 8 km west of the site. Most of the Aboriginal sites have been recorded close to the major water systems of the area including the Namoi River and Mooki River. Based on an initial desktop review, Aboriginal sites in the area generally occur on landforms associated with low-lying alluvial plains, such as those found within the site boundaries. Of the 1,100 sites recorded, 668 (60%) were identified on alluvial landforms with most sites within 50 m of water sources, while overall approximately 90% of sites were recorded within 200–300 m of water sources (RACAC 2002).

3.3.4 Implications for archaeological material at the site

The desktop review of the site and surrounds indicates that the site is not within a particularly archaeologically sensitive landscape – it is over 1 km from reliable water and on a continuous landscape element with no remarkable features. However, the surrounding landscape elements of mountains, swamps and the Namoi River make the site an interesting area which may have experienced Aboriginal occupation through transitory movement. The most likely Aboriginal sites to occur would be open campsites expressed as stone artefacts. Any stone artefacts originally deposited at the site are likely to have been locally displaced through clearing and ploughing but may still survive on or below the ground surface.

Modified trees have been identified in the local area; however, they are unlikely to occur within the site boundary because it has been largely cleared of native vegetation. Notwithstanding, remnant mature trees should be inspected for signs of scarring or carving.

3.4 Proposed field survey

EMM, with the assistance of Aboriginal site officers, propose to conduct an archaeological survey of the site over the course of one day. The site covers a singular landform pattern, and as such, the survey will aim to capture a representative sample of the site rather than covering the entirety of the site boundary.

Portions of the proposed electricity transmission line alignments (which are yet to be confirmed) will be surveyed. The extent of survey in these areas will depend on the levels of existing disturbance because most of the areas are existing easements and are highly disturbed.

The survey effort will focus on the most archaeologically sensitive areas, ie the land closest to water courses, but other areas distant from watercourses will also be sampled as a survey control. A series of walking survey tracks (transects) will be walked across the survey area. Vehicles may be used for reconnaissance of areas of interest or to travel between survey areas.

The survey will inspect all areas of ground within survey transects which will be covered by survey participants. All Aboriginal sites will be marked through flagging and then GPS waypoint recording by an archaeologist.

The survey transects will be undertaken with reference to a survey plan that will be prepared prior to fieldwork. However, there will be provision for changes to the survey plan once on-site, to account for inaccessible areas or where landform units, unfruitful to the survey effort, are identified.

3.5 Test excavation

If the outcomes of the assessment support it, a test excavation under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code) (DECCW 2010a) may be required. However, no test excavation is currently planned or predicted to be warranted for this project.

The aim of the test excavation would be to determine whether Aboriginal objects (such as stone artefact sites) are present beneath the ground surface through archaeological excavation using a systematic sample of test pits. The test excavation will involve a series of between 50 cm^2 and 100 cm^2 test pits in transects in areas of potential archaeological deposit. Some variation to the method may be made dependant on the areas of potential and consultation.

If Aboriginal objects are identified, excavation must continue to the extent where enough data are retrieved to allow an assessment of their cultural significance and to characterise the landscape. The resulting information will be combined with the results of the survey and serve as the basis of the ACHA report and would assist in identifying the type of archaeological management appropriate to the nature of the archaeological deposits and their significance.

3.6 Post-fieldwork

After fieldwork, a draft report will be prepared by EMM. Each RAP will be invited to submit relevant information on Aboriginal heritage values which will be addressed in the report after which each group (or individual if not part of a group) will be issued with a draft report for review and comment. All comments will be addressed in the final report.

4 What's next?

We look forward to receiving any response your organisation wishes to make about the proposed methodology by **28 November 2017.** Your response will be documented and considered for the assessment. Most importantly, your cultural information is also welcome within this timeframe but it can also be submitted up until the completion of the draft ACHA.

Attachment B Fieldwork Application Pack

1 Introduction

This letter is to invite you to apply to participate in fieldwork as part of the Aboriginal heritage assessment for the Orange Grove Sun Farm. It provides details of the fieldwork participation. You must agree to the contractual arrangement to be eligible.

The survey is anticipated to take one day to sample the site. Site officer positions are limited and not all RAPs will be requested to provide a site officer.

Your organisation is invited to apply for one paid representative to participate in the field survey. Applicants must be willing to agree with the information provided below and satisfy the criteria regarding employment.

If applicants are sole traders or individuals, we will only accept applications from the sole trader or individual nominated as part of the registration.

If applicants are an organisation, please nominate one person who will be part of the field survey.

The aim of fieldwork participation is to assist in the archaeological investigation. As specified by the NSW Office of Environment and Heritage (OEH) guidelines, involvement in fieldwork is separate from the Aboriginal community consultation process. We will continue to consult with all registered parties regardless of the outcomes of the fieldwork application process.

2 Scope of work

The field survey aims are to understand the landforms within the study area, identify Aboriginal heritage values (including Aboriginal sites and areas of potential archaeological deposit), to inform the ACHA component of the environmental impact survey (EIS), including preparation of recommendations to manage potential impacts to Aboriginal sites and areas of archaeological potential.

The scope of work for field survey participation by RAPs is limited to involvement in field survey. No reports are requested as part of this arrangement. Reports submitted voluntarily are welcome, but are not part of this contractual arrangement. Separate to the scope of work for field surveys, all RAPs will be issued with a draft ACHA report for review and comment and be invited to meet with EMM and Orange Grove Sun Farm Pty Ltd to discuss the project. Details on your involvement in these activities will be provided in due course.

3 Fieldwork dates

The pedestrian survey is proposed for **late November** dates to be advised. Fieldwork days will be from 8 am to 4 pm.

The meeting point for field survey will be provided to survey participants in **November 2017**. A visitor induction and pre-start meeting will be held there before starting the survey. **Applications must be received by 17 November 2017** to ensure the field survey can commence within the scheduled timeframe.

4 Roles and responsibilities

The roles and responsibilities of EMM archaeologists, RAPs and Orange Grove Sun Farm Pty Ltd representatives (if applicable) during field surveys are outlined in Table 1. Specific work, health and safety responsibilities are included in the Safe Work Method Statement, which must also be signed prior to field surveys.

Table 1 Field survey roles and responsibilities

Team members	Roles and responsibilities
EMM archaeologists	• Direct the field surveys; • record Aboriginal sites and environmental data; • oversee safety (refer to Safe Work Method Statement); • consider and respect cultural perspectives, views, knowledge and advice and record data and/or direct field surveys based on these outcomes; and • apply professional code of conduct at all times.
RAPs	• Actively participate in field surveys, including assist with Aboriginal site identification and recording where requested; • provide cultural perspectives, views, knowledge and advice to EMM archaeologists; • indicate areas of cultural significance (if known), including: - sites or places associated with ceremonies, spiritual/mythological beliefs and traditional knowledge, which date from pre-contact period and which may have persisted until the present time; - sites or places with historical associations, which date from the post-contact period and are remembered today (e.g. plant and animal resource use areas and known camp sites); and - sites or places of contemporary significance (apart from those areas for which Aboriginal objects remain), for which the significance has been acquired in recent times; • be fit for work and have suitable experience to assist on the archaeological survey; • adhere to all safety protocols provided in the Safe Work Method Statement; and • apply professional code of conduct at all times.
Orange Grove Sun Farm Pty Ltd representatives	• Escort EMM archaeologists and RAPs during field surveys; • where possible, assist by answering questions regarding the project generally; • adhere to all safety protocols provided in the Safe Work Method Statement; and • apply professional code of conduct at all times.

5 Code of conduct

Professional code of conduct is expected at all times from all participants. Harassment or other inappropriate behaviour is not acceptable. Professional code of conduct should be based upon principles of mutual respect (each member of the survey team has the right to have a say and be heard) and acknowledgement for the knowledge, skills and experience of the other members of the survey team and their contributions to the program.

Any person who behaves in a manner that is abusive, threatening or humiliating towards other members of the survey team will be asked to leave immediately and will not receive any payment for work on that day.

6 Contractual arrangement

Aboriginal stakeholders who agree to these terms will be contracted to **Orange Grove Sun Farm Pty Ltd** for the preparation of the ACHA.

6.1 Payment

The terms of payment for successful applicants are as follows:

- one nominated person from each successful RAP will attend on the rostered days;
- $600 per person per day for those nominated RAP members who are able to demonstrate more than five years experience (excluding GST); and

- $300 per person per day for those nominated RAP members who have less than five years experience.

The nominated daily rate for field surveys excludes GST. If your organisation is registered for GST please list this on the invoice. If you are not registered for GST please do not include.

6.2 Invoicing

Your invoices must be formal tax invoices and include:

- the registered business name, address and ABN;
- details of the persons and dates involved; and
- electronic banking details.

One invoice should be issued for all of an organisation's involvement. Invoices must be made out to **Orange Grove Sun Farm Pty Ltd**. Payment will be made following receipt of a tax invoice from your RAP organisation. Payment will not be made separately to individual organisation members. Invoices are processed on a monthly cycle, so invoices received by 30 January are anticipated to be paid in February. Invoices received after this date will be processed in the next monthly billing cycle.

Send all invoices to the details below or rdesic@emmconsulting.com.au within four weeks of the completion of the survey:

Orange Grove Sun Farm
c/o Ryan Desic
PO Box 21
St Leonards NSW 1590

7 Application process

If your organisation agrees to the above scope of work, roles and responsibilities, code of conduct and contractual arrangement you are invited to apply to participate in fieldwork. The following information must be presented with your application to be considered as part of the fieldwork team. Due to the large group of RAPs, positions are limited and not every RAP will be able to participate. One representative from each successful group will be present on the rostered survey days.

Applications must be received by 17 November 2017 to ensure the field survey can commence within the scheduled timeframe.

7.1 Fitness to work

Persons involved in field surveys must be fit to perform strenuous physical activity in areas of rugged terrain. It is expected that over 10 km will be walked each day. Persons with medical conditions that hamper physical activity should not participate for safety reasons. Surveys are designed in loops or other configurations which will not involve returning to vehicles for breaks. All food and water must be carried. Survey participants must not be under the influence of drugs or alcohol.

Field representatives should also be able to show evidence of their previous experience in archaeological field surveys. As a minimum requirement, field representatives must be able to identify a range of Aboriginal object and site types. This includes, but is not limited to:

- stone artefacts (and the ability to distinguish these from naturally occurring rocks);
- grinding stones and grinding grooves;
- rock shelters (including rock art); and
- scarred or carved trees.

Knowledge regarding areas of potential archaeological deposits is also welcome.

7.2 Insurance

All participants must have a registered business name, ABN and address. These details must be unique to the organisation.

Appropriate insurance coverage (workers compensation, public liability insurance) must be provided by all applicants. If your organisation does not require these insurances please provide a written statement from WorkCover or your insurance provider acknowledging your insurance status and the reasons why this occurs. **Applications will not be considered without attached copies of workers compensation and public liability insurance, or evidence that workers compensation is not required.**

7.3 Safety

Each person who participates in the field survey will be required to read and sign on to EMM's Safe Work Method Statement prior to commencing the field survey.

Each day, each participant will be required to bring:

- hat with sun brim, sun block, safety glasses (or sunglasses that provide equivalent protection) and suitable clothing and footwear (i.e. high visibility shirt or vest, long sleeved shirt, long pants, wet weather gear, work gloves and steel-capped lace-up boots; no sneakers or running shoes);
- food and water sufficient for the day (at least two litres of water);
- pens, notebooks etc as required to satisfy your group's recording requirements; and
- a bag to carry your food, water and equipment.

The survey will cease if extreme weather (e.g. electrical storms or extreme wind, heat or cold) or other unsafe conditions (e.g. bushfires) occur. However, the survey will continue through light rain, and it is the responsibility of each survey member to bring adequate clothing in case of poor weather.

Should participants not have appropriate clothing they may not be able to participate in the survey.

8 Checklist

Does your application contain the following information?

- evidence of the nominated representative's previous experience in archaeological field surveys;
- evidence of workers compensation and public liability insurance where applicable or a statement declaring they are not required; and
- the completed sign off form attached.

9 Close

Applications must be received by 17 November 2017 to ensure the field survey can commence within the scheduled timeframe.

Please do not hesitate to contact me if you have any questions or comments. I can be contacted on 02 9493 9541 (or 0411 329 712) or via email (email address provided below). We look forward to working with you on this project.

Ryan Desic
EMM Consulting
PO Box 21
St Leonards NSW 1590
Phone: 02 9493 9541
Fax: 02 9493 9599
Email: rdesic@emmconsulting.com.au

Orange Grove Sun Farm Field Survey Employment Agreement

I have reviewed and agree to the terms and conditions provided in this letter relating to employment services and criteria, safety, fitness for work, payment, code of- conduct and insurance.

Name: **Date:** **Signed**

Name: **Date:** **Signed**

Ryan Desic

From: Ronald Long [ronaldlong3270@yahoo.com.au]
Sent: Tuesday, 7 November 2017 11:52 AM
To: Ryan Desic
Subject: cultural heritage project

Hi Ryan it's Ronald Long sending you my expression of interest for the Orange Grove Sun farm as a cultural and heritage consultants this is my email address my mobile number is 0413177911 and if you need anything else do not hesitate to contact me.

Thank you Ronald Long

Sent from Yahoo7 Mail on Android

Ryan Desic

From: John Magner [ceo@redchieflalc.com.au]
Sent: Monday, 16 October 2017 9:19 AM
To: Ryan Desic
Subject: Gunnedah sun farm

Hi Ryan
Please be advised that representatives from Red Chief Local Aboriginal Land Council will be interested in being involved in the assessment process for the Gunnedah Sun Farm.

John Magner
CEO

Red Chief Local Aboriginal Land Council
Phone: (02) 6742 3602
Fax: (02) 6742 3815
Email: ceo@redchieflalc.com.au

I acknowledge the Traditional Owners of the land I work on, the Kamilaroi people. *I pay my respects to our Elders Past, Present and Future.*

Ryan Desic

From: natasharodgers06 [natasharodgers06@gmail.com]
Sent: Tuesday, 14 November 2017 12:15 AM
To: Ryan Desic
Subject: Expression of interest
Attachments: orange grove .pdf

Hi Ryan,

I would like to register as a Registered Aboriginal Party (RAP) in relation to the to orange grove project. As well as my mother Yvonne Rodgers and my aunty Anna long. Included in this email is the employment agreement we have signed . I will forward on my aunties in the next few days.

You can contact me via this email or on my number 0432535904.

My address is 7 Toy court, wodonga VIC 3690.

As discussed in a previous call I will email you in the next couple of days of the stories my mum metion as well as my own.

Yours sincerely,

Natasha Rodgers

Murra Bidgee Mullangari

Aboriginal Corporation Cultural Heritage
ICN: 8112

Date: 13/11/2017

Attention: Ryan Desic

EMM
PO Box 21,
St Leonards NSW 1590

Dear Ryan,

Re: Registration – Orange Grove Sun Farm Gunnedah

Murra Bidgee Mullangari Aboriginal Corporation would like to register an interest in the above project. Our family and members hold a strong connection to the Tamworth, Muswellbrook, Gunnedah and surrounding areas, we have lived and some of our family still reside in the area and surrounding areas. My Grandfather Phillip Carroll, my mother and grandparents lived with my aunty in Tamworth for a number of years. Ryan Johnson will be the contact person for this project. Our corporation's members and family holds cultural knowledge relevant to determining the significance of Aboriginal objects(s) and/or places(s) in the area of the proposed project. We have been involved in projects with the RMS Parramatta (Mark Lester 0448731510), RMS Wollongong (Joanne Damcevski), RMS Wagga Wagga (Andrew Whitton 0418486685), RMS Wollongong (Lee Davison), Aecom Australia (Geordie Oakes 0410513509), Dominic Steele Consulting Services (Dom 0411884232), Apex Archaeology (Leigh Bate 0401443218), Artefact Heritage (Veronica Norman 0415660490), Navin Officer Heritage (Nicola Hayes 0421274470), EMM Consulting (Ryan Desic 0411329712), Niche Environment and Heritage (Balazs), Kelleher Nightingale (Mark Rawson), Virtus Heritage (Dr Mary – Jean Sutton) and Extent Heritage (Alistair Hobbs 0437241221).

If you require further details please feel free to contact me either by mobile or email. I look forward to hearing from you.

Kind regards

R Johnson

Ryan Johnson (Carroll) | **Site Officer**
0467255733
Murra Bidgee Mullangari
Aboriginal Corporation Cultural Heritage
A: PO Box 246, Seven Hills, NSW, 2147
E: murrabidgeemullangari@yahoo.com.au

NSW GOVERNMENT Department of Industry

Murra Bidgee Mullangari Support their community in financial hardship with Energy Assistance packages. We are a NSW Government approved EAPA voucher distributor. We are a not for profit organisation.

Ryan Desic

From: katrina Mckinnon [a1.cleaning@hotmail.com]
Sent: Wednesday, 8 November 2017 6:15 PM
To: Ryan Desic
Subject: Aboriginal consultation

Hi my name is Katrina McKinnon
of 33 Hinton Dr
Gunnedah
2380
Phone 0423041758
ABN 60752168730

I'm interested in the Orange Grave Sun farm for steak holding
Plz if there is any information that I have left out plz contact me
by email... A1.cleaning@hotmail.com
thank you
Katrina

Ryan Desic

From: Ryan Desic
Sent: Thursday, 2 November 2017 7:18 PM
To: Ryan Desic
Subject: Orange Grove Sun Farm

Hello ryan cheriecarro ll turrise gnunnawal e lder gungeewongcorp got your lettertoday i would like to register for sunfarm orangegr ove will send all deta ils tomorrow ihave 6 4 years ofknowledge and stories ilook forw ard to meeting you th anks cherie

Sent from my iPhone

Ryan Desic

From: cacatua4service@tpg.com.au
Sent: Saturday, 4 November 2017 7:40 PM
To: Ryan Desic
Cc: classic_black_sampson@hotmail.com
Subject: Orange Grove Sun Farm

Ryan

Cacatua General Services would like to express our interest in being involved in the above proposed Aboriginal Consultation for Orange Grove Sun Farm.

Cacatua is an Aboriginal owned business created to assist proponents and Archaeologists to undertake cultural heritage archaeological assessment according to all processes and approved conditions. Our aim is to provide quality Aboriginal cultural heritage works, while ensuring compliance to work specific practices.

Our Organisation is fully insured and registered with OEH. The staffs of Cacatua have undertaken work on all types of sites.

Please do not hesitate to contact us if you require more information.

Yours truly

G Sampson

George Sampson

Manager

Ryan Desic

From: Aaron Talbott [atgomilaroi@outlook.com]
Sent: Monday, 16 October 2017 3:28 PM
To: Ryan Desic
Subject: Sun Farm

Dear EMM

AT Gomilaroi Cultural Consultancy would like to register our interest in the proposed solar farm for Gunnedah. My details are below including new address as of today.

Regards

Aaron Talbott
M 0437 875 680
E atgomilaroi@outlook.com

11 Wentworth Street
Gunnedah NSW 2380
ABN 92005620045

AT Gomilaroi Cultural Consultancy would like to acknowledge First People's of this nation. Respect to Elders Past and Present and Future Generations.

Ryan Desic

From: cacatua4service@tpg.com.au
Sent: Saturday, 4 November 2017 7:45 PM
To: Ryan Desic
Subject: Orange Grove Sun Farm

Ryan,

We would like to express our interest in being involved in the above proposed Aboriginal Consultation for the Orange Grove Sun Farm.

AGA Services is an Aboriginal owned partnership business that aims to assist proponents in undertaking cultural heritage work according to all processes and approved conditions, while ensuring compliance to work specific practices.

Our Organisation is fully insured and registered with OEH. We have undertaken work on all types of sites. Please do not hesitate to contact us if you require more information.

Yours truly

A Sampson *G Sampson*

Ashley Sampson Greg Sampson

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
PO Box 21
St Leonards, NSW, 1590

T +61 2 9493 9500
F +61 2 9493 9599
E info@emmconsulting.com.au

www.emmconsulting.com.au

8 December 2017

Michelle Howarth

Office of Environment and Heritage North West Region
PO Box 2111
Dubbo NSW 2830

Re: Registered Aboriginal Parties for Orange Grove Sun Farm

Dear Michelle,

In accordance with section 4.1.6 of the Aboriginal cultural heritage consultation requirements for proponents (DECCW 2010) the Office of Environment and Heritage (OEH) is hereby notified that a total of 11 parties responded to either an advertisement or an invitation sent in accordance with the guidelines for the Orange Grove Sun Farm project NSW at the following Lot and DPs;

Table 1 Lot and DP of project location

Lot	DP
1	945590
2	945590
27	754928
2	1068520

As per the consultation requirements the forms of notification are attached.

Table 2 Registered Aboriginal Parties

Aboriginal Group Registrations	Date registered
AT Gomilaroi Cultural Consultancy	November 2017
Cacatua General Service (Cacatua Culture Consultants)	November 2017
Gomeroi People NC2011/006	November 2017
Gunjeewong Cultural Heritage Aboriginal Corporation	November 2017
Katrina Mckinnon	November 2017
Murra Gidgee Aboriginal Corporation, Cultural Heritage	November 2017
Natasha Rodgers	November 2017
Red Chief Local Aboriginal Land Council	November 2017
Ronald Long	November 2017
AGA Services	November 2017
Shirley May Talbott	November 2017

Yours sincerely

Kerryn Armstrong
Consultant archaeologist
karmstrong@emmconsulting.com.au

Regional Publishers Pty. Limited Tamworth/New England

A.C.N. 000 014 700

THE NORTHERN DAILY LEADER	PO BOX 525 Tamworth 2340	02 6768 1200
COUNTRY LEADER	PO BOX 525 Tamworth 2340	02 6768 1200
THE TAMWORTH TIMES	PO BOX 525 Tamworth 2340	02 6768 1200
THE TENTERFIELD STAR	PO BOX 15 Tenterfield 2372	02 6736 1799
THE ARMIDALE EXPRESS	PO BOX 70 Armidale 2350	02 6776 0500
THE ARMIDALE EXTRA	PO BOX 70 Armidale 2350	02 6776 0500
THE WALCHA NEWS	PO BOX 12 Walcha 2354	02 6777 2513
THE INVERELL TIMES	PO BOX 5 Inverell 2360	02 6720 0100
THE GLEN INNES EXAMINER	PO BOX 249 Glen Innes 2370	02 6732 1666
THE GUYRA ARGUS	PO BOX 205 Guyra 2365	02 6779 1730
THE MOREE CHAMPION	PO BOX 397 Moree 2400	02 6750 6600
THE GOONDIWINDI ARGUS	PO BOX 284 Goondiwindi 4390	07 4671 1666

ABN: 33 003 357 720

TAX INVOICE / STATEMENT

Customer details:

EMM CONSULTING
LEVEL 1, SUITE 6, 146 HUNTER STREET

NEWCASTLE NSW 2300

Account No:	34184746
Invoice No:	3377401
Phone:	0249074800
Dates:	12/10/2017 to 12/10/2017
Classification:	628 (Public Notices)
First Words:	NOTICE OF ABORI
Size:	11.5 cms x 3 cols
Inserts:	1
Authorised by:	LOUISE MCCAULEY
P/O Number:	
Package:	

Insertion details:

Publication	*Run date*
Namoi Valley Independent	12/10/2017

Total (ex GST):	$183.75
Creditcard surcharge	$1.65
plus GST:	$18.54
Total Charges: (inc GST):	$203.94

Payment details: *(RC)*

Payment received with thanks

10/10/2017 16:01:32 $203.94 555005...012 receipt: 7015894793 Honour with identification (08)

Notice of Aboriginal Consultation

Project name: Gunnedah Sun Farm

Proponent: Gunnedah Sun Farm Pty Ltd on behalf of OVERLAND Sun Farming Pty Ltd

Location: DP 945590 (Lot 2), DP 754928 (Lot 27) and DP 1068520 (Lot 2), approximately 12 km east of Gunnedah, NSW.

The proponent proposes to develop the Gunnedah Sun Farm, a large-scale solar photovoltaic generation facility and associated infrastructure.

Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and / or Aboriginal places in the area of the proposed project are invited to register an interest to consult with the proponent on the topic of Aboriginal cultural heritage and the proposed activity.

The purpose of community consultation with Aboriginal people is to assist the proposed applicant in: 1) assessing the Aboriginal heritage values of the area, 2) preparing an environmental impact statement under Part 4, Division 4.1 of the NSW Environmental Planning and Assessment Act 1979, preparing application's for Aboriginal heritage impact permits (should they be required) and 3) to assist regulators in the assessment of Aboriginal heritage reports prepared for this project.

Registrations of interest must be submitted in writing on or before 25th October. Registrations should include the name of a contact person, address and other relevant contact details, preferably including an email address. The names of registered Aboriginal parties will be passed on to the relevant Local Aboriginal Land Council and the Office of Environment and Heritage unless a request to the contrary is made.

Send registrations of interest to:

Gunnedah Sun Farm
C/o EMM Consulting Pty Limited
PO Box 21, St Leonards, NSW, 1590
Fax: 02 9493 9599
Email: rdesic@emmconsulting.com.au

Registration of interest does not guarantee paid involvement.

Ryan Desic

From: Ryan Desic
Sent: Thursday, 8 February 2018 4:48 PM
Cc:
Subject: Orange Grove Sun Farm Draft ACHA

Dear Registered Party,

Overview

Thank you for your continued interest in the Orange Grove Sun Farm Project. We are now up to Stage 4 of the Aboriginal consultation project which is review of the draft Aboriginal cultural heritage assessment report.

Notes for your review and comment

If you have specific comments for the document, please identify the section heading and page number so that we know specifically which part of the document to address. Our preference is for you to provide your comments in writing via email or letter.

When to respond by

If you wish to comment, please provide them by **9 March 2018.** If you are having trouble responding within this timeframe please let us know early so that we can consider alternative options.

Downloading the document

The document is available to download using the following link:

https://spaces.hightail.com/receive/cuIYYXXT1p

Close

Please do not hesitate to contact me on my details below for any matters regarding the projects or if you have any difficulties in downloading or reading the documents.

Regards,

Ryan Desic | Senior Archaeologist

T 02 9493 9500 | **D** 02 9493 9541 | **M** 0411 329 712 | **F** 02 9493 9599

Ground Floor, Suite 01, 20 Chandos Street, St Leonards NSW 2065

PO Box 21, St Leonards NSW 1590

www.emmconsulting.com.au

planning | environment | acoustics | ecology | heritage | groundwater | soils, closure, rehab | gis

Appendix B

AHIMS site cards

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 20-4-0817 **Date recorded:** 23-04-2018

Site Location Information

Site name: OG_PST1

Easting: 251321 **Northing:** 6570770 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Mr.	Desic	Ryan

Organisation: EMM Consulting Pty Ltd

Address: Ground Floor Suite 1, 20 Chandos St, St Leonards 2065 NSW

Phone: 0294939541 **E-mail:** rdesic@emgamm.com

Site Context Information

Land Form Pattern: Plain **Land Use:** Farming Intensive

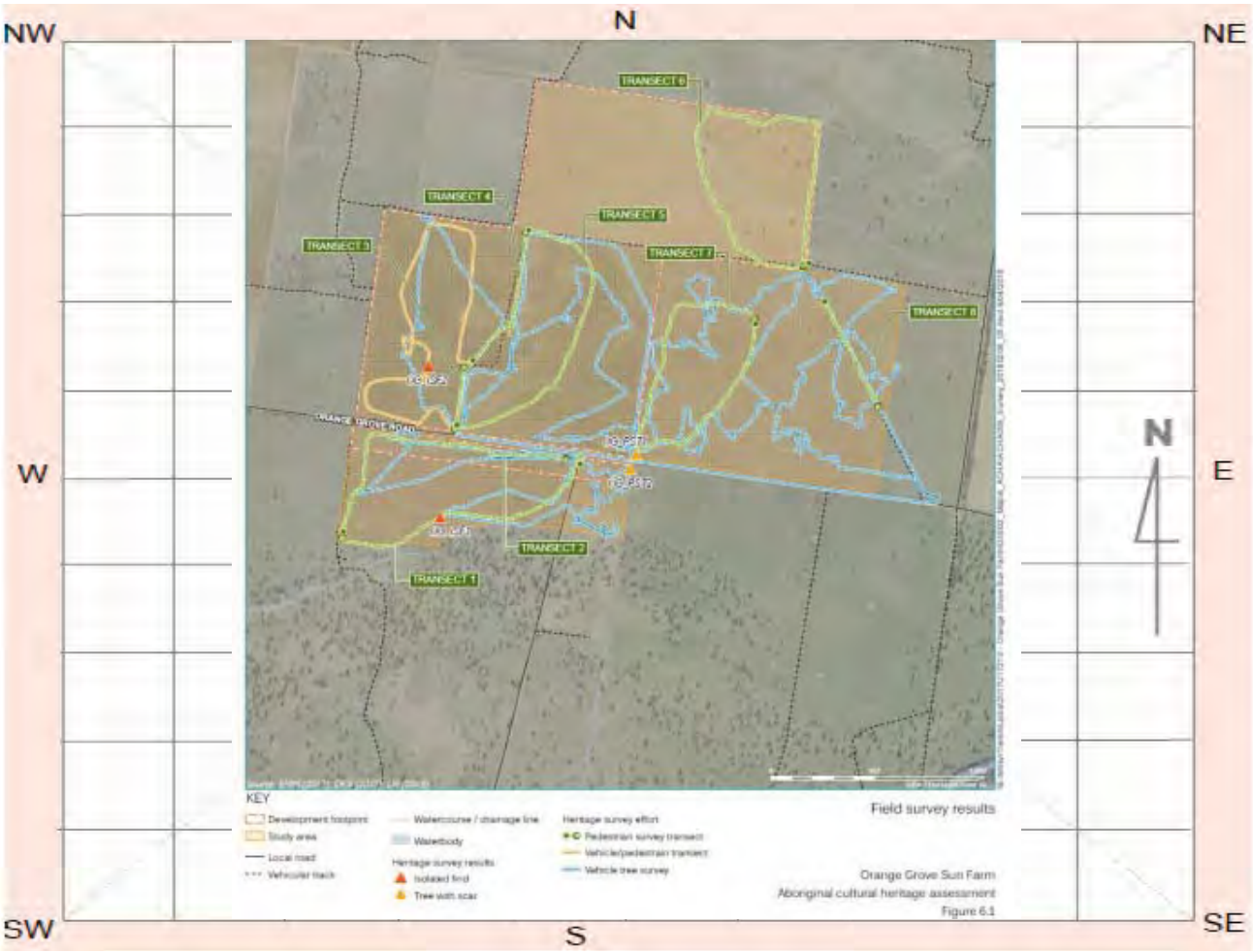
Land Form Unit: Plain **Vegetation:** Cleared

Distance to Water (m): 1800 **Primary Report:** Orange Grove Sun Farm Aboriginal Cultural Heritage Assessment

How to get to the site: Enter property from Orange Grove Road and the tree is in the south-western corner of a paddock. Tree is visible from Orange Grove Road but the scar is facing north-east and is only visible from inside the property

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1.	Modified Tree	1			2	30	60	40
					Oval			Box

Description:

The scar is approximately 60 cm by 40 cm, but the scar overgrowth extends up to 30 cm. The scar features a smooth dry face, a regular shape and overgrowth but no definite attributes were identified such as stone axe marks. Scar is 1 m above the ground.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.								

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
4.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
5.							

Description:

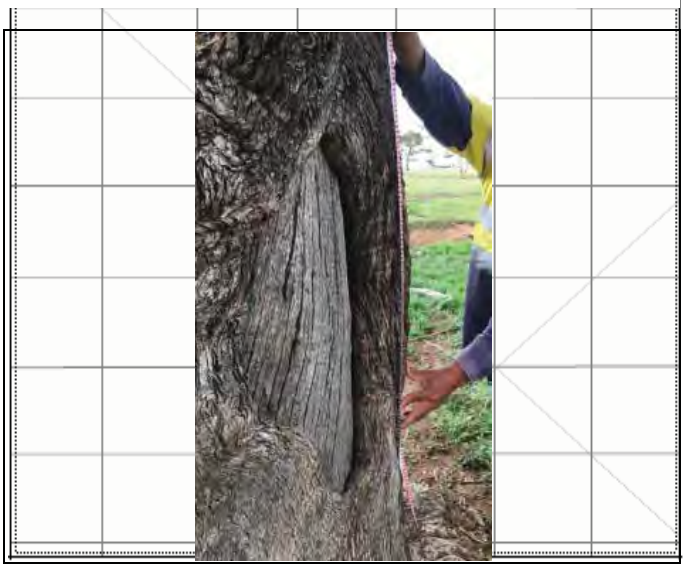
Other Site Info:

Site plan

Site photographs

Description: View of scar on OG_PTS1 (view south-west)

Description: Close up of scar



Description: Side view of the scar

Description: Measuring the scar

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 20-4-0818 **Date recorded:** 23-04-2018

Site Location Information

Site name: OG_ISF2

Easting: 250346 **Northing:** 6571267 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Mr.	Desic	Ryan

Organisation: EMM Consulting Pty Ltd

Address: Ground Floor Suite 1, 20 Chandos St, St Leonards 2065 NSW

Phone: 0294939541 **E-mail:** rdesic@emgamm.com

Site Context Information

Land Form Pattern: Plain **Land Use:** Farming Intensive

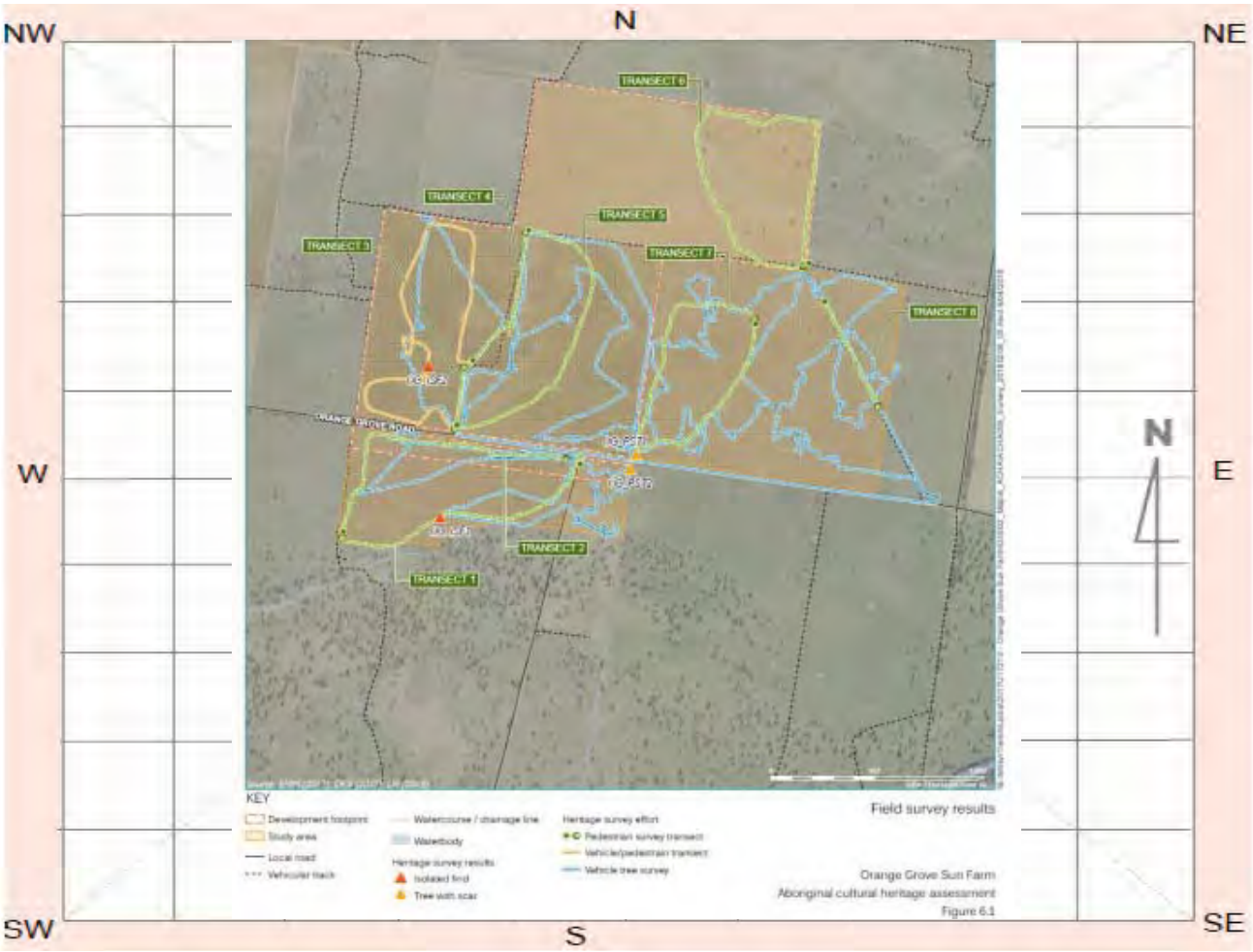
Land Form Unit: Plain **Vegetation:** Cleared

Distance to Water (m): 800 **Primary Report:** Orange Grove Sun Farm Aboriginal Cultural Heritage Assessment

How to get to the site: Enter property from Orange Grove Road and head north-west along existing irrigation bund for approximately 200 m

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

Orange Grove Isolated Find 2 (OG_ISF2) was identified on an irrigation canal bund exposure on survey Transect 1. The site comprises a singular flake made from chert. OG_ISF2 is within the project development footprint.

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
4.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
5.							

Description:

Other Site Info:

Site plan

Site photographs

Description: Close up of OG_ISF2

Description: Location of OG_ISF2 marked by pink flag (view south)

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 20-4-0819 **Date recorded:** 23-04-2018

Site Location Information

Site name: OG_ISF1

Easting: 250403 **Northing:** 6570535 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title Mr. **Surname** Desic **First name** Ryan

Organisation: EMM Consulting Pty Ltd

Address: Ground Floor Suite 1, 20 Chandos St, St Leonards 2065 NSW

Phone: 0294939541 **E-mail:** rdesic@emgamm.com

Site Context Information

Land Form Pattern: Plain **Land Use:** Farming Intensive

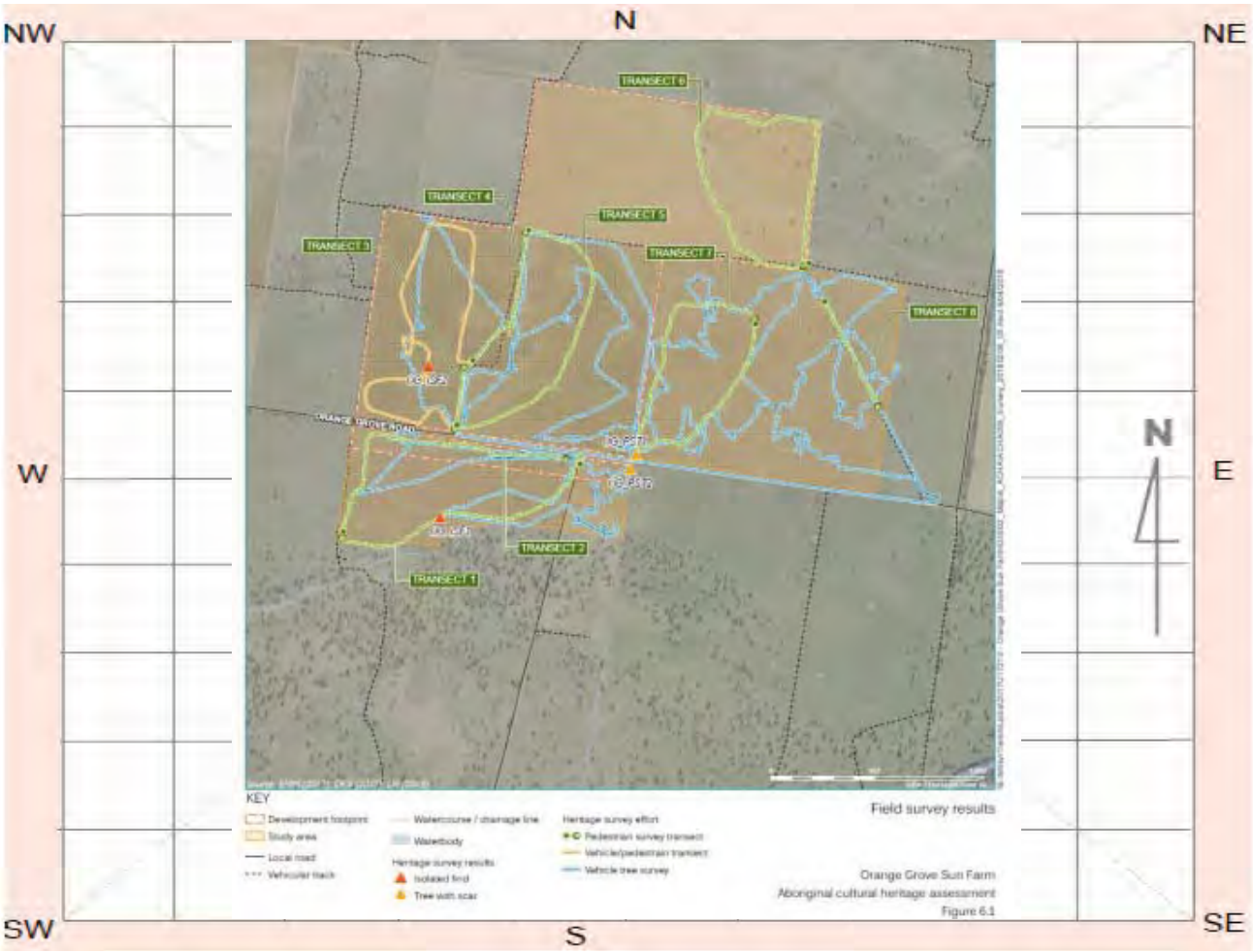
Land Form Unit: Plain **Vegetation:** Cleared

Distance to Water (m): 200 **Primary Report:** Orange Grove Sun Farm Aboriginal Cultural Heritage Assessment

How to get to the site: Enter property from Orange Grove Road and head south along vehicle track for approximately 500 m

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	1	1	1				

Description:

Orange Grove Isolated Find 1 (OG_ISF1) was identified on a vehicle track exposure on survey Transect 1. The site comprises a singular flake made from indurated mudstone/tuff (IMT) with its distal edged chipped from recent damage. Max length 40 mm.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
4.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
5.							

Description:

Other Site Info:

Site plan

Site photographs

Description: Location of OG_ISF1 marked by blue flag (view south-west)

Description: Close up of OG_ISF1

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 20-4-0820 **Date recorded:** 23-04-2018

Site Location Information

Site name: OG_PST2

Easting: 251351 **Northing:** 6570841 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title Mr. **Surname** Desic **First name** Ryan

Organisation: EMM Consulting Pty Ltd

Address: Ground Floor Suite 1, 20 Chandos St, St Leonards 2065 NSW

Phone: 0294939541 **E-mail:** rdesic@emgamm.com

Site Context Information

Land Form Pattern: Plain **Land Use:** Farming Intensive

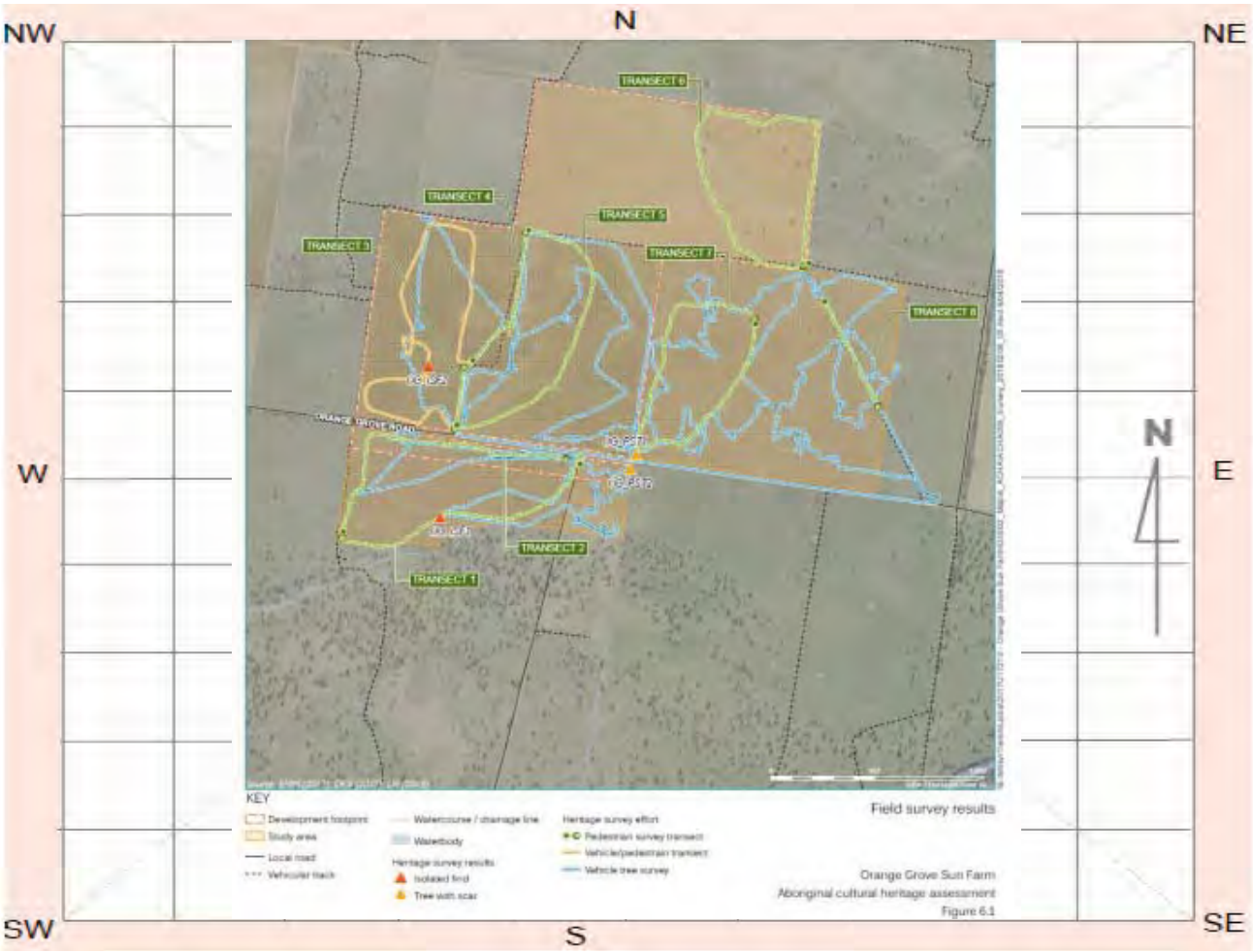
Land Form Unit: Plain **Vegetation:** Cleared

Distance to Water (m): 1800 **Primary Report:** Orange Grove Sun Farm Aboriginal Cultural Heritage Assessment

How to get to the site: Enter property from Orange Grove Road and the tree is in the north-eastern corner of a paddock. Tree is visible from Orange Grove Road but the scar is facing north-east and is only visible from inside the property

Other site information: The scar was identified on a mature Bimble Box (Eucalyptus populnea) but the height of the scar above the ground could not be determined. This was because the tree is located within the mounded bund of an irrigation canal which has obscured the natural base of the tree.

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1.	Modified Tree	2			5	30	170	50
					Oval			Box

Description:

The scar is 170 cm in length and 50 cm across its widest part, but the scar overgrowth extends up to 30 cm. Similar to OG_PST1, the scar features a smooth dry face, a regular shape and overgrowth but no definite attributes were identified such as stone axe marks.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.								

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
4.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
5.							

Description:

Other Site Info: The scar was identified on a mature Bimble Box (Eucalyptus populnea) but the height of the scar above the ground could not be determined. This was because the tree is located within the mounded bund of an irrigation canal which has obscured the natural base of the tree.

Site plan

Site photographs

Description: Primary scar

Description: Showing tree

Description: Showing primary scar in relation to secondary scar

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

SYDNEY
Ground floor, Suite 01, 20 Chandos Street
St Leonards, New South Wales, 2065
T 02 9493 9500 F 02 9493 9599

NEWCASTLE
Level 1, Suite 6, 146 Hunter Street
Newcastle, New South Wales, 2300
T 02 4907 4800 F 02 4907 4899

BRISBANE
Level 4, Suite 01, 87 Wickham Terrace
Spring Hill, Queensland, 4000
T 07 3839 1800 F 07 3839 1866